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CONTENTS.

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

AN ADDRESS on the Unsolved Problems in Gynæcology and Obstetrics. Read by invitation before the American Gynæcological Society on June 2nd, 1921, by W. BLAIR BELL, B.S., M.D., Professor of Obstetrics and Gynæcology in the University; Obstetrical and Gynæcological Surgeon to the Royal Infirmary; Obstetrical Surgeon to the Maternity Hospital, Liverpool 1139

THE RELATION of Heart Disease and Pregnancy. By Sir JAMES MACKENZIE, M.D., F.R.S., Director of St. Andrews Clinical Institute.—In Four Sections—Section IV.—(*Illustrated*) 1342

ORIGINAL ARTICLES.

The Epidemiology of Measles in a Rural and Residential Area. By RALPH M. F. PICKEN, M.B., Ch.B., B.Sc., D.P.H., Assistant Medical Officer, Public Health Department, Glasgow.—(*Illustrated*)..... 1349

The Necessity of Notification of Measles. By REGINALD DUDFIELD, O.B.E., M.A., M.B. 1353

A Further Consideration of Sanatorium Controls. By E. WARD, M.D., F.R.C.S., Tuberculosis Officer, South Devon 1354

Modern Artificial Limbs. The Work of the Arm-training Centre at Roehampton. By C. JENNINGS MARSHALL, M.D., M.S., Assistant Surgeon and Junior Orthopædic Surgeon to King's College Hospital.—(*Illustrated*)..... 1374

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A Case of Delayed Tetanus Treated with Large Doses of Anti-tetanic Serum. By S. E. DENYER, C.M.G., M.A., M.D., B.C., F.R.C.S., D.P.H., Acting Hon. Physician, Hull Royal Infirmary 1356

A Case of Diverticulitis with Metastatic Suppuration. By W. E. FOGGIE, M.D., Extra Physician, Dundee Royal Infirmary 1357

MEDICAL SOCIETIES.

Royal Society of Medicine: The Private Clinic System: An Important Discussion.—The Problem of the Private Clinic System in Great Britain 1358

NEW INVENTIONS.

All-glass Inhaler (Dr. R. C. Macdonald).—(*Illustrated*) 1364

REVIEWS AND NOTICES OF BOOKS

Annals of the Middlesex Hospital at Clacton-on-Sea during the Great War, 1914-19. By Comyns Berkeley and Victor Bonney 1365

Dictionary of Applied Chemistry. By Sir Edward Thorpe, C.B., LL.D., F.R.S. 1365

Anatomy of the Nervous System. By Stephen W. Ranson 1365

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Perspective: The Old and the New Method. By A. S. Percival 1366

Military Surgeon..... 1366

LEADING ARTICLES.

NOTIFICATION OF MEASLES.. 1367

ANTIMALARIAL MEASURES IN INDIA 1367

HÆMOGLOBIN..... 1368

ANNOTATIONS.

"Back-Pressure" and Heart Failure..... 1369

The Dentists Bill..... 1369

No Neck 1370

Post-graduate Medical Education..... 1370

Injection of Antitoxic Serum and Sudden Death 1371

The Coroners (Remuneration) Bill 1371

Chancre of the Gum 1371

The Examination of Gastric and Duodenal Contents..... 1372

Industrial Cataract 1372

Congenital Atresia of the Œsophagus 1372

The I.M.S. Dinner..... 1373

Sir Thomas Wrightson..... 1373

Congress of Medical History 1373

SPECIAL ARTICLES.

X Ray and Radium Protection Committee; A Preliminary Report..... 1377

The Cavendish Lecture 1378

Switzerland 1379

British Pharmaceutical Conference 1379

CORRESPONDENCE.

Permanganate of Potash as a Styptic for Serous Surfaces (Prof. John Dsirne)... 1380

X Ray Lesions and Medicinal Waters: A Suggestion (Dr. R. Fortescue Fox, Dr. Paul Ferreyrolles)..... 1380

The Diagnosis of Dysentery by the Sigmoidoscope (Mr. J. P. Lockhart-Mummery) 1381

Control of Venereal Disease: The Red Cross Regional Conference (Mr. H. Wansey Bayly) 1381

The Properties and Composition of Ethanesal (Dr. K. B. Pinson) 1382

Digitalis and the Peripheral Circulation (Dr. W. J. Grant) 1383

The Federation of Medical and Allied Societies (Dr. N. Howard Mummery)..... 1382

The Treatment of Diabetes 1382

Early Diagnosis in Diphtheria 1382

PUBLIC HEALTH SERVICES.

The Oxford Contributory Hospital Scheme 1383

Reports of Medical Officers of Health..... 1383

School Medical Service..... 1384

MEDICAL NEWS.

University of Cambridge Diploma in Hygiene..... 1385

Industrial Welfare Society... 1354

Conference on Physically Defective Children..... 1369

The Semon Lecture 1373

Royal Society of Medicine.... 1376

Rontgen Society..... 1385

Medico-Legal Society 1385

Federation of Medical and Allied Societies..... 1385

Society of Medical Officers of Health: Naval, Military, and Air Force Hygiene Group..... 1385

Royal Medical Benevolent Fund Society of Ireland.... 1385

London Medical Exhibition 1396

South London Hospital for Women 1386

Royal College of Physicians of London..... 1386

Oxford Ophthalmological Congress, 1921..... 1386

Medical Golf Competitions... 1386

Prospective Candidate for the Scottish Universities... 1396

Royal Medical Benevolent Fund 1396

Hôpital St. Antoine, Paris.... 1397

East African Campaign Dinner 1397

Irish Medical Association.... 1397

St. Thomas's Hospital Jubilee..... 1397

Committee on International Hygiene 1397

The Children's Country Holidays Fund 1397

Donations and Bequests 1397

OBITUARY.

William Abraham Bell, M.B. 1397

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: National Health Insurance Bill 1388

House of Lords: The Dentists Bill..... 1389

House of Commons: Disabled Men and Unemployment Contributions.—Unemployment Benefit and Treatment Allowances.—The Criminal Law Amendment Bill.—Permits for Bellahouston Hospital.—Appointments of Medical Referees.—Death-rate among Miners.—Insured Man and Sanatorium Treatment.—Washington Maternity Convention..... 1398

THE SERVICES.

Royal Army Medical Corps.. 1391

Indian Medical Service..... 1391

Royal Air Force..... 1391

The Waziristan Operations.. 1391

NOTES, SHORT COMMENTS, &c.

Report of the Sanitary Commissioner with the Government of India for 1918 1393

National Baby Week 1395

Chartered Society of Massage and Medical Gymnastics... 1396

The A.D.R.M..... 1396

Muzzling Orders..... 1396

Infant Mortality in the West Indies..... 1396

Medical Diary..... 1392

Appointments 1392

Vacancies..... 1392

Births, Marriages, and Deaths 1393

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An Address

ON THE

UNSOLVED PROBLEMS IN GYNÆCOLOGY AND OBSTETRICS.

Read by invitation before the American Gynæcological Society on June 2nd, 1921,

BY W. BLAIR BELL, B.S., M.D. LOND.,

PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY; OBSTETRICAL AND GYNÆCOLOGICAL SURGEON TO THE ROYAL INFIRMARY; OBSTETRICAL SURGEON TO THE MATERNITY HOSPITAL, LIVERPOOL.

TO-DAY gynæcology and obstetrics stand high among the developments of surgery along scientific and specialised lines; yet the more I think of this, the greater is my wonderment that it should be so. It seems such a short while since our specialties were struggling towards the light. When, therefore, I received your invitation to address this learned society, it occurred to me that it might not be inappropriate if I were to consider for a few moments the principal avenue through which approach may be made to the secrets still hidden from us, and the personnel and equipment required for the task.

I do not think there can be any doubt that the collective status of the gynæcologists and obstetricians of the world in regard to clinical acumen and surgical technique is nearing the limit which must be set to human achievement, and that the same will soon obtain in regard to the bacteriological aspects of our special subjects.

But in contradistinction to this must be placed the unsatisfactory character of our advancement—the slow progress we are making—in the more essentially biological, including biochemical, problems, connected not only with the normal morphology and physiology of the female genitalia, but also with the pathological developments that may be associated with the structure and function of the reproductive organs. Concerning the actual details of these problems I shall have but little to say, except by way of illustration.

EDUCATIONAL METHODS.

First, let me consider how far our present methods of education are conducive to the correct mental attitude of the future investigator, whether they are methods that stimulate the powers of perception and make every student an interested observer from the beginning.

It is a curious commentary on the value of the allied sciences to the surgeon of to-day that there is a growing tendency, at any rate in my own country, to minimise the importance of biology and to urge the superior—I might almost say "exclusive"—claims of the final hospital study; and the attitude is not confined to the student. This seems to me unfortunate, for it means that we are catering entirely for men of moderate intelligence and not at all for those on whom may fall the responsibility of sustaining progress in our science. As a result of our existing methods, the clinical aspects of gynæcology and obstetrics have been thoroughly illuminated, as I have said, while the more abstruse biological features are but very imperfectly understood and their claims hardly realised. It may be argued that there are many expert physiologists, biochemists, and comparative anatomists; and this is true, but alone they cannot help us because they do not yet know our difficulties, neither have they the clinical nor technical knowledge with which to guide their steps. Up to the present the teaching of elementary gynæcological anatomy and physiology has been conducted by the clinical instructor, because these subjects have been almost invariably ignored by the physiologist and anatomist. This means, generally speaking, that expert physiologists and anatomists have remained in more or less complete ignorance of these matters, and are, therefore, even now unaware of the hiatuses in our knowledge.

There can be no doubt, I think, that the man who continually has to face difficulties in practice is the one most likely to find the means of circumventing them, provided he have sufficient all-round knowledge and adequate facilities for his task. It is only natural, however, that each should turn his attention to those matters concerning which he is best informed. It is obvious, therefore, that if the many biological problems connected with gynæcology and obstetrics, which so far have baffled us, are to be elucidated we must modify the general plan of education in regard to those who may perchance attempt to throw light on what is now obscure and indistinct.

In attempting to indicate the direction in which educational improvement may be made, I shall doubtless merely give verbal form to what must already have taken shape in the minds of many. In our educational methods we are too apt, I think, to set store on detail. We should, I believe, aim at encouraging a comprehensive and inclusive outlook. We destroy originality by overloading the young mind with so-called facts which often are the easily deducible results of observation. Again, it seems to me that the different subjects of the general curriculum are taught in too disjointed and exclusive a manner. As gynæcologists and obstetricians we should have the right—and the same applies to teachers in the other branches of final medical study—to define the subject-matter of the physiological and anatomical courses. The anatomist should be required to demonstrate and teach comparative and human anatomy on the lines we desire, and the physiologist should be obliged to lead, by experiment and demonstration in the laboratory, more directly to what will be taught later in regard to the human subject. There must, in fact, be more coördination throughout. It would be better, for instance, if the key-subject biology were taught in such a way as to make the student realise that in it man is included in a wide generalisation with the lower animals, and that man is but the evolutionary physiological and morphological climax. The student should be more definitely impressed with the knowledge that in his biological and biochemical studies he is watching the evolution of man, that he is following the simple to the complex, and that what may be normal at one stage is pathological in a higher state of evolution—that hermaphroditism, for example, is normal in the earth-worm but abnormal in man. If the student could be imbued with some conception of the ultimate value of all his biological work, and could be taught not to look upon it as a separate and isolated obstacle to arrest his onward course, not only would his hospital studies be more interesting and more relatively important, but his mental attitude and outlook would be as much fitted for the investigation of biological as for the study of purely clinical problems.

THE WIDER SCIENTIFIC MENTALITY.

The present trend, then, of medical education in Great Britain has been towards the production of good clinicians, rather than of men with their minds alive to the biological—morphological and physiological, including biochemical—import of the phenomena they observe. I often wonder how far this question has been realised in America, this training of the student towards a wider scientific mentality. In Great Britain, where general practitioners are now being urged to coöperate in an investigation concerning the beginnings of disease, it is clear that there is a need of reform in our methods of education if we are to expect results on the lines I have indicated.

Supposing, however, that the student has been educated on these principles, in what circumstances and in what environment will he find inspiration,

and obtain the best results? The establishment and success of clinical units and of units for group-study in North America and Canada may provide the answer. Their foundation is, of course, open to the interpretation that these systems have been brought into existence because the brain of the average intelligent man is incapable of grasping and understanding all the side issues that go to make up the sum of medical knowledge; and I have heard it stated by an advocate of them that this is their raison d'être. Moreover, it is said that only in them can material properly be utilised and the one-line worker find an immediate use for his output. While the last part of this statement is true, I cannot agree entirely with the first. A properly educated man of wide perception is not necessarily a man of encyclopædic knowledge, but, rather, one whose mind is so saturated with basic principles that the mosaic of detail falls into an orderly pattern under the influence of his prescient intelligence. A man with the index type of mind is rarely original, and is not, therefore, necessarily worthy of encouragement. I have already referred to this in regard to the education of the student.

Pasteurs are, of course, born not made, but I believe that useful imitations can be developed by proper education and training, imitations good enough in the helpful environment of which I have just spoken to obtain results. Because the great biological and medical discoveries in the past have emanated from the brains of men ploughing a lonely furrow, there is no inherent reason why men of similar intellect should not again arise and in the more perfect environment that can be assured to-day unravel the outstanding questions. Meanwhile it should be possible now for men of lesser ability with proper education and a perfect environment to surmount difficulties which the master-minds of the past, with their more limited opportunities, could not overcome.

I would once more urge the importance, so well recognised in this country, of clinical work going hand in hand with scientific laboratory investigations. You have many wise foundations, whereas we are sadly handicapped for want of them. We in Great Britain who are interested in the scientific aspects of our subjects have not the same facilities.

In this continent there is offered subsequently to the well-educated man every opportunity for attacking these problems at a living wage; but in Great Britain we cannot always secure the best men for the service of science, for we cannot offer them a reasonable financial reward, a reward in any way commensurate with that to be obtained from practice. This is a matter that is exercising us greatly, for times are changing, and while clinical matters are so well established that they can take care of themselves, there is urgent need that further progress which, as I have stated is largely biological, should not be crippled and hampered for want of proper organisation in teaching and post-graduate research.

If, then, the last ramparts of gynæcological and obstetrical diseases are to be captured we must modify to some extent our methods of education and we must bring correlation, breadth, and inspiration into the musty empiricism of the preliminary studies. I know the curriculum is overcrowded, but it is mostly with what could well be spared. We must, also, encourage scientific enterprise, and after educating our students for their life-work give them the opportunity of utilising their talents and of advancing the science of obstetrics and gynæcology.

I shall now endeavour briefly to substantiate my statement that the great outstanding problems in gynæcology and obstetrics are biological in the narrowest sense of the word.

MORPHOLOGICAL PROBLEMS.

The development of the human ovary can now be described with a considerable degree of certainty, but the same cannot be said in regard to that of the genital passages. To what factors, for instance, is due the fusion of the Müllerian ducts in the genital cord? This is of considerable importance in connexion with the common so-called malformations of the uterus and vagina. Prof. Wood Jones, who has done so much excellent work on the comparative anatomy of the genital organs, believes that we should look upon these conditions of imperfect union as atavisms rather than malformations; and in this light the comparative anatomy of the genitalia becomes both interesting and instructive. Indeed, it is from this point of view alone that information can be obtained. If serial sections be cut of the divided and uniting uterine horns in various species of rodentia and carnivora, all the later stages in the development of the human uterus may be seen. Moreover, it will be made clear that the human uterus has morphologically but two muscular coats and not three, as usually described. Nevertheless, we do not yet know what determines the final development of the human uterus, and we can hardly expect to know until we have decided definitely what are the variations in the factors that lead to the different degrees of Müllerian union that are normal, constant phenomena in closely related animals. In rodents there may be seen the complete didelphic condition with double vagina (viscacha) and the gradual evolution to the single vagina and bicornute uterus (agouti).

Again, can the peritoneal pouch that encloses the ovarian extremity of the tube and ovary itself, a structure seen in certain rodents, and, as I have found in a less complete form in hedgehogs, be passed over as a freak structure, in spite of the fact that, as Bland-Sutton has shown, it may exist as an atavism in woman? It seems to me that a structure so useful to fertilisation and conception is worthy of serious study, especially from the point of view of the state of peritoneal currents and other influences in the creatures concerned. An investigation concerning the nature of the secretion of these sacs would also be of considerable interest.

Let me take another matter which, possibly, is of more clinical importance. How far are we familiar with the causes of the irregularities in the female bony pelvis, apart from those resulting from gross postnatal disease, such as rickets? We talk about civilisation, athletics, and the rest, but what causes a generally contracted pelvis in a well-developed non-rachitic woman who has been guilty of none of the enterprises that militate against functional perfection?

The work of Whitridge Williams and others has demonstrated beyond reasonable doubt that the typical funnel-shaped pelvis is associated with high assimilation, but I do not think the cause of high assimilation is definitely known. Such an important matter, especially in this country, is deserving of extensive systematic investigation. Comparative racial studies, in which different races are examined in their natural environments, might throw considerable light on this and on other pelvic abnormalities. There can be no doubt that civilisation may greatly affect structure as well as function.

As a last morphological point of interest—albeit there are many others that will occur to all—let me say that I look forward to the day when some gynæcologist or obstetrician will give us the clue to the mode of origin of pathological new growths. After all the gynæcologist and obstetrician has, time and again, given a lead to the rest of the profession; and in the problem to which I refer he is on his own ground, for his work is chiefly concerned with the preservation of the structures and functions through the medium of which neoplastic developments normally occur.

PHYSIOLOGICAL PROBLEMS.

It is within the last 20 years that practically all the recognised facts concerning the female functions have been discovered. We now know, if I may quote one of my own aphorisms, that a woman is a woman on account of all her internal secretions

and not only because she possesses ovaries. But we still lack certain evidence as to the nature of the controlling force that determines the primary sex-characteristics of the person concerned; nor do we know how it comes about that even in the course of development a conjunction of sex-characteristics may occur, a condition of hermaphroditism. Even if it be that the masculinity or femininity balance of the internal secretions is disturbed, this is still an effect, not a cause. That this fascinating and intricate problem is capable of solution I am convinced. It may well be the life-work of someone capable of estimating the gradual changes through the numerous classes of creatures that indicate the evolutionary origin of man—of some comparative morphologist with all the histological technique of the present at his disposal on which to graft new methods of observation; and then, when the gross serial steps have been demonstrated, he may perchance gain an inkling of that on which they depend, an inkling of the force which imbues the fertilised ovum of man with maleness and femaleness.

There are few, surely, who cannot recognise to-day the vast importance of femaleness as opposed to maleness, and few, too, who are not conversant with the essential physiological—that is to say, biochemical—differences that influence the mind and body. We have, too, some knowledge of what constitutes puberty. It is, we believe, the time of life when the metabolism has met the claims of somatic growth. The potentiality of a girl's metabolic resources at this time is such that it can support the strain of reproduction and all that this involves. But we do not know what happens at puberty to start the new train of events. What is the hormone that makes the ovary aware of the situation; is it then that the genital functions of the ductless glands come into being, and, if so, what leads to this awakening? That it is not a habit of life is too obvious to need discussion; it is due, rather, to a series of chemical events that may be altered and delayed by many circumstances of health and environment.

Nature of Menstruation.

Then, again, have we established without the possibility of fallacy the nature of menstruation? My view that it is an excretory process in regard to the principal elements required during pregnancy for the building up of the fœtus, and during lactation for the formation of milk, as is made evident by the calcium metabolism, requires full confirmation and elaboration in regard to the exact part played by the ovaries and other internal secretions.

To pass on, I would ask if there is general agreement concerning the factors involved in the production of the climacteric? I myself, for instance, disagree with those who think that the normal menopause is the result of primary ovarian atrophy, although many of the phenomena of the menopause are due to this change. The fact that the artificial menopause is produced by oöphorectomy has been a blind to all of us. If the ovaries are removed from a young woman with protracted amenorrhœa and ovarian destruction menopausal symptoms do not supervene. The artificial menopause is induced only when there has been pre-existing ovarian activity. At the commencement of the normal menopause the ovaries are normal and active, indeed, at the end of that phenomenon the woman may be capable of conception. Why is it that ovarian substance or extract of any kind, and in any combination whatever and however administered, does not produce specific results at the physiological menopause: whereas whole-gland ovarian substance, especially in association with thyroid substance, gives relief in case in which the menopause has been induced by operative procedures? There are some, I know, who will dispute this; but I believe the facts, as I have stated them, to be true. From this jumble—shall I say?—of observations it appears justifiable to ask you to consider as a working hypothesis for further investigations the view that there is at the climacteric some substance circulating in the blood, some natural biochemical toxin, or something withdrawn from it, which leads not only to ovarian atrophy but also to the other physiological and structural alterations that take place at the "change of life."

Another group of important correlated functions about which we know but little is that concerned with fertilisation and conception.

Selective Sterility.

I think that light will soon be shed on that curious anomaly I call "selective sterility." In view of recent additions to our knowledge in regard to the incompatibility of the blood of persons in different groups, it is not unlikely that selective sterility—as well as successful homoplastic, as opposed to autoplastic, ovarian grafting—will be found to depend on a similar, if not identical phenomenon. So far we know that a difference in the blood-grouping of married couples has no obvious relation to the possibility, or otherwise, of conception. Again, the normal inter-relations that exist between the mother and her fœtus in utero have been studied to some purpose; but we are still ignorant of the way in which the growing embryo controls the development of the chorionic epithelium that sometimes takes on such disastrous activity when the control is removed.

I do not think the theory that in such circumstances there is lutein over-growth is sufficient. It is common to see vesicular mole and chorion-epithelioma without abnormal lutein development.

Toxæmias of Pregnancy.

Moreover, how little we know concerning the toxæmias of pregnancy. It seems to me that before we can arrive at any proper idea of the disturbance produced we must know far more intimately the normal metabolic mechanism concerned and the maternal forces that are marshalled against the deleterious effects produced by what is, after all, a new growth in the uterus. If the recent work of Dold and Obata concerning eclampsia be correct, as seems possible, we shall be placed in possession of very interesting information concerning a biological phenomenon of vast importance, for I do not doubt that, if it be fully confirmed, we shall be able to test the blood of every pregnant woman before so serious a condition as eclampsia supervenes and to treat her with normal human serum. I have myself seen excellent results with blood-transfusion.

Although hundreds of thousands of human beings are expelled from the uterus daily we have but a faint glimmering of the biochemical factors leading to the determination of parturition. And what of lactation? Is the mechanism of the simple nature I have described in the Sex Complex? If so, we are little in advance of the ancients who, owing to their powers of perception, have always been worthy of consideration in matters of priority.

Such gynæcological and obstetrical problems seem to me almost infinite when I let my mind wander around the outposts of our small impregnable position of certain knowledge. I have, however, to-day the desire to emphasise not only the importance of those unsolved problems, which we all admit, but also the essential biological nature of them. I have attempted, too, to show that our education tends to drive us forward almost entirely along the deeply-trodden paths rather than along those barely to be seen or yet uncut through virgin country. I would plead, therefore, that our students and our post-graduates be more broadly educated at least in the great principles of biology, for I believe that only by way of physiological, especially biochemical research, and by the comparative study of simpler forms of structure shall we be able to bring our art towards scientific pefection.

The Relation
OF
HEART DISEASE AND PREGNANCY.

BY SIR JAMES MACKENZIE, M.D. EDIN., F.R.S.,
DIRECTOR OF ST. ANDREWS CLINICAL INSTITUTE.

IN FOUR SECTIONS—SECTION IV.

IRREGULAR ACTION OF THE HEART.

Significance of Irregular Heart Action.

THE importance of irregularity of the heart's action has not been sufficiently recognised. It is a matter seemingly so confused that few writers try to understand its real significance. Moreover medical knowledge had not until recently advanced far enough to enable physicians to differentiate its various forms.

This state of affairs is unfortunate, because a clear understanding of irregularity throws light on many obscure features of cardiac action and gives information of the most valuable kind in diagnosis, prognosis, and treatment. Indeed, the neglect of this subject renders a great part of the writings of physicians of little or no use. I have referred to Macdonald's description of cases of mitral regurgitation. In this description, as I pointed out, the incidental remark that the heart was irregular gives the clue to the real nature of the condition. An occasional reference such as this, if one is able to apply it, is often far more helpful than all the other details. Unfortunately, irregularity is usually considered so unimportant that it is not mentioned. Even when it is mentioned, the reference is often so vague as to preclude an exact differentiation and diagnosis.

But there is more than this. It is unhappily true that one can rarely trust a statement that the heart was irregular. I have often seen perfectly regular hearts described as irregular. Tracings of these showed beyond possibility of dispute that irregularity was not present.

I go farther than that and say that even when a sphygmogram is given the statement that the heart is irregular cannot always be accepted. I have just been looking at some sphygmograms taken by a physician in a case of pregnancy. One of these is described as "irregular." Certainly a casual examination seems to justify this description, for the pulse waves are of varying height. But when the length of each beat of the pulse is measured accurately, this first impression is disproved. The beats are of exactly the same length and are absolutely regular. Thus the apparent irregularity is artificial. I know from my experience in taking records, especially when there is laboured breathing, that the movements of the patient's arm will cause a marked variation in the height and depth of the waves, which in this instance was mistaken for an irregularity.

When, over thirty years ago, I began the study of irregular heart action, I was told that the subject was so difficult and confused that it was a waste of time to attempt such an investigation, and that in any case little benefit would result even if I happened to be successful. Even to-day, few physicians, and evidently no obstetricians, have made themselves familiar with this subject. As a consequence the subject is still shrouded in mystery; and where we get mystery we get fear, and we find people with irregularities treated like people with murmurs. We have, too, the same kind of prognosis—"the sign may be of no significance, but, on the other hand, it may be serious." As there is no clear differentiation, there is no certainty regarding the forms which are innocent and those which are of serious import.

Mechanism of Heart Irregularities.

The vast majority of irregularities can be classified in a manner which renders them easy of recognition by the unaided senses. This, I think, is of great importance, for it is obvious that if knowledge of this subject is to be utilised in practice, differentiation must be accomplished without apparatus and in a reasonably short space of time.

The manner in which the irregularities arise will be made clear by means of the diagram (Fig. 8).

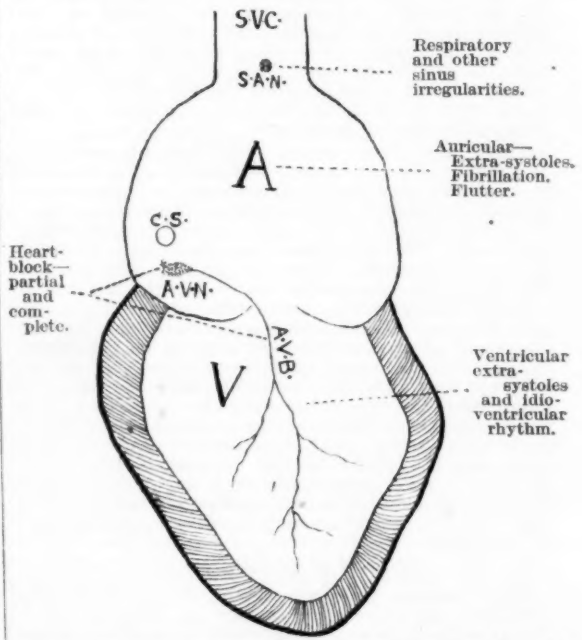

FIG. 8.—Diagram representing the parts concerned in the movements of the heart, and the places of origin of the different forms of irregular heart action. *S.V.C.*, Superior Vena Cava; *S.A.N.*, Sino-Auricular Node; *A.*, Auricle; *C.S.*, Opening of Coronary Sinus; *A.V.N.*, Auriculo-Ventricular Node; *A.V.B.*, Auriculo-Ventricular Bundle; *V.*, Ventricle.

This diagram represents certain structures concerned in the mechanism of the heart's movements. The heart's contraction starts at a small collection of peculiar fibres, the so-called sino-auricular node (*S.A.N.*) situated at the mouth of the superior vena cava (*S.V.C.*). The stimulus from the *S.A.* node causes contraction of the auricle (*A.*). From the auricle the stimulus passes to the auriculo-ventricular node (*A.V.N.*), the tissues of which resemble, in their structure, the fibres of the sino-auricular node. This *A.V.* node is situated in the wall of the right auricle near the opening of the coronary sinus (*C.S.*). The stimulus passes from the *A.V.* node along a bundle of peculiar cells, the auriculo-ventricular bundle (*A.V.B.*) to the ventricle (*V.*), where it breaks up into innumerable branches distributed to different parts of the ventricle.

While, in normal circumstances, the stimulus of contraction passes in this manner, i.e. from the sino-auricular node to the ventricle, yet each of the different parts, the auricle, the *A.V.* node, the *A.V.* bundle, and the ventricle, is capable itself of initiating a stimulus which can produce a contraction. The reason that the stimulus arises first in the *S.A.* node is that this tissue is most sensitive. After a stimulus of contraction has been discharged, no other stimulus can be discharged until a certain time has elapsed. This time is required in order that the tissue may

recover its excitability. The rate of recovery is most rapid in the *S.A.* node. Thus, other parts of the heart are again whipped to action before they are able to discharge a stimulus of their own manufacture.

This is why, for instance, in complete heart-block, when the connexion between the ventricle and the upper parts of the heart is severed (as in damage of the *A.V.* bundle), the ventricle beats at a much slower rate than the auricle. In this condition the auricle may be contracting at the rate of 70 or 80 beats per minute, while the ventricle pursues an independent contraction at the rate of 30.

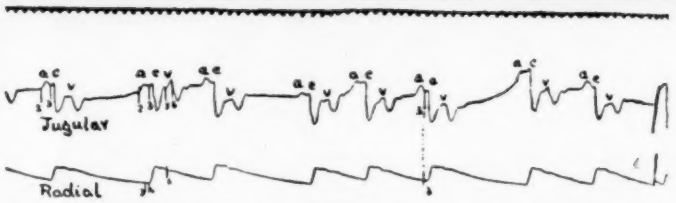

FIG. 9.—Simultaneous tracings of the jugular and radial pulses, showing an irregular pulse. The waves *c* in the jugular tracing are due to the carotid beat, and correspond in time to the pulse beats in the radial tracing. The wave *a* is due to the auricular systole, and it is seen that in this form of irregularity the auricles and ventricles equally participate—as shown by the waves *a* and *c*.

In abnormal circumstances the parts below the *S.A.* node may become so excitable that the stimulus may arise in them and set up independent contractions, which anticipate in point of time the stimulus for the *S.A.* node. This may occur occasionally in single beats, and so give rise to such irregularities as the extra-systole, which is due to premature contraction of the auricle or of the ventricle (Fig. 11). In the former case the auricular contraction precedes the stimulus from the *S.A.* node; in the latter case the ventricular contraction precedes the auricular or occurs at the same time. The premature contraction of auricle and ventricle may be continuous for a shorter or longer time, and so give rise to the various abnormal rhythms and the tachycardias (Figs. 20 and 21).

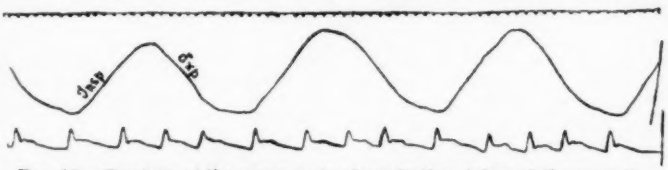

FIG. 10.—Tracings of the movements of respiration, taken at the same time as the radial pulse, showing that in the respiratory irregularity the rate of the heart increases during inspiration and becomes slower during expiration.

Differentiation of Heart Irregularities.

The places where the different irregularities arise are shown in the diagram (Fig. 8).

In the course of an inquiry into irregular action of the heart, I found that there were several groups of cases, and that these could be clearly differentiated on two grounds:

(1) On the ground of the mechanism by which they were produced; and

(2) On the ground of their clinical significance.

While the first basis of differentiation has been the subject of much research, the second has received far too little attention. This is due, I think, to the fact that the method by which knowledge of the kind required can be obtained has not been understood.

It is perfectly evident that, while an understanding of the mechanism by which an irregularity is produced is of profound interest and of great value, so far as the patient is concerned at any rate, knowledge of what is going to happen is of far more importance. To the doctor in charge of the patient such a knowledge is therefore essential to rational practice. This is particularly true in connexion with the problem of pregnancy, where an abnormal sign like irregular action of the heart may be present and must be interpreted.

It will be found that in pregnancy we have to deal chiefly with three forms of irregularity: respiratory irregularity, extra-systoles, and auricular fibrillation.

Respiratory Irregularity.

In this irregularity, which is probably the most common of all, the pulse is continuously varying in its rate. Simultaneous records of the radial artery and jugular vein show that the auricles as well as the ventricles participate (Fig. 9). While the irregularity can be clearly demonstrated by graphic records, it is necessary that the doctor should recognise it by his unaided senses. Advantage is taken of the fact that the alterations of the pulse are dependent on the respiration (Fig. 10). The pulse rate increases during inspiration, and slows during expiration. Frequently, however, this relationship cannot be recognised in a patient who is breathing normally; for a new stimulus has, in such cases, come into play before the effects of the previous one have passed off. Thus a confused sort of rhythm is encountered. When, however, the patient is made to breathe slowly and deeply the relationship of the altering rhythm, with the different phases of respiration, can be easily determined (Fig. 10). I wish particularly to draw attention to this method of determining the type of irregularity, as a doctor can apply it without any mechanical assistance. The character of the irregularity is best made out by listening to the heart at the same time as the patient breathes slowly and deeply.

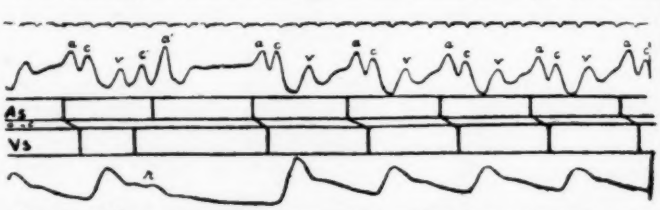

FIG. 11.—The upper tracing is from the jugular, taken at the same time as the radial (lower tracing). The interpolated diagram explains the events that happened in the heart during the period of irregular action. The down strokes in the space *As* represent the auricular systoles, and correspond with the *a* waves in the jugular tracing. The space *a–c* represents the passage of the stimulus along the *a–v* bundle, while the down strokes in the space *Vs* represent the ventricular systoles; and each corresponds with a pulse wave in the radial tracing. It will be seen that with one exception the auricular beat is followed by a ventricular beat. This one exception shows a wave *c'* in the jugular tracing, and a small wave *r* in the radial tracing, which occurs prematurely, i.e. before the auricular wave *a'*. These events represent what happens in the intermittent pulse, and show that the irregularity is due to a premature contraction (or extra-systole) of the ventricle.

The explanation of this irregularity is that a stimulus arises during expiration which affects the vagus and so produces the temporary slowing. On account of this fact the irregularity is sometimes spoken of as a "vagal irregularity," while on account of its association with the breathing it is called a "respiratory irregularity." Again, as it arises from a stimulation of the motor centre of the heart in the remains of the sinus venosus, it is called "sinus irregularity," to distinguish it from irregularities arising in other parts of the heart. There are, however, more than one form of sinus irregularity. I collected a large number of cases showing this irregu-

larity, and found that the vast majority occurred in young people. The next most prevalent form of irregularity (the extra-systole) I found, on the contrary, to be most common in adults and elderly persons. So to make a distinction I called this "respiratory irregularity" the "youthful type," and the extra-systole the "adult type." I mention this differentiation as it has a distinct value in practice.

"Respiratory irregularity" is common in healthy young women, and in some women of maturer years, especially when there is present in the case a nervous element. It is a physiological phenomenon, indicative neither of disease nor of impairment. In no case should it be a reason for treatment or a bar to pregnancy.

The Extra-Systole.

This irregularity is due to a premature contraction of the ventricle, occurring independently of the stimulus from the auricle. It occurs usually at the same time as the auricular contraction or a little before it. Sometimes the auricle also contracts prematurely: this premature auricular beat is followed by a small ventricular contraction. Premature beats can be recognised as small beats in the pulse occurring too early and followed by a pause. Sometimes the small beat is not felt, and there seems to be a long pause in the pulse. The irregularity can thus be recognised without graphic record by feeling the pulse and auscultating the heart at the same time. When the pause in the pulse is felt the heart will give two short sharp sounds or one muffled sound, and this will be followed by a pause longer than usual (Fig. 12). A glance at the tracings and diagrams will explain the mechanism. If the pulsation in the jugular be observed during the pause of the pulse, a large wave may often be detected (Fig. 17). This is due to the fact that the auricular contraction is taking place at the same time as the premature ventricular contraction.

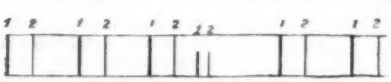

FIG. 12.—Diagram representing the sounds of the heart during an extra-systole.

The auricle cannot send its blood forward into the contracted ventricle, and so sends it back into the jugular vein.

Doctors should familiarise themselves with these clinical phenomena, as this form of irregularity and the "respiratory irregularity" constitute the great bulk of irregular heart actions. I repeat that both of them can, as a rule, be recognised by the unaided but trained senses.

My inquiries into the significance of this form of irregularity, which were pursued by watching large numbers of active people who showed it, revealed to me the fact that it is of no grave clinical significance. If heart failure did occur in people with extra-systoles, there were always other conditions present to account for it. So that, when this irregularity is the only abnormal sign it can be ignored so far as the prognosis is concerned; if heart failure is present, then the prognosis should be based on the other signs and not on the extra systole.

So far as pregnant women are concerned I found extra-systoles present in 50 per cent. of healthy cases.* Usually they occurred at rare intervals and their detection was often accidental. Occasionally they were of frequent occurrence. In all cases the pregnancy was completed and the confinement passed with no trouble. I have in addition followed many women for 20 and 30 years, and the results justify this view.

* This was the percentage I found on examining 100 cases about thirty years ago. I have looked for my data, but I have lost the references and the notes of most of my cases. Among those of which I do possess records the percentage is not so high. The matter is not, however, of much consequence.

AURICULAR FIBRILLATION AND PAROXYSMAL TACHYCARDIA.

The form of irregularity which is most commonly associated with heart failure in women at the child-bearing age is that due to fibrillation of the auricle. In this condition the muscle fibres do not contract in unison as in the normal beat, but each fibre twitches and contracts independently. The result is that the auricle is to all intents and purposes functionally inactive.

The Discovery of Auricular Fibrillation.

It was this inactivity which led to the discovery of the condition. I had recognised that in mitral stenosis of a progressive type changes slowly took place in the murmurs. I was therefore watching the course of the disease in a number of my patients whom I had attended many years earlier for rheumatic fever. In one case, a woman whom I had under observation for 17 years, there had for many years been present signs of auricular activity: for example, a presystolic murmur, and the wave in the jugular pulse, which I had come to associate with the beating of this chamber of the heart. There had also been present well-marked pulsation of the liver, due, mainly, to a wave caused by the auricle.

The patient was suddenly seized with great breathlessness on exertion, and developed a rapid and irregular heart (Fig. 5). When her heart had quietened down under digitalis I was surprised to find that there was, now, no presystolic murmur, nor any waves due to the auricle in either jugular or liver pulse. In fact, at the time the heart had become irregular all signs of auricular activity had disappeared. I assumed that the auricle had become paralysed, and in my early writings I described the condition as paralysis of the auricle (see Figs. 13 and 14, and also Figs. 6 and 7, THE LANCET, June 18th, p. 1284).

Relation of Auricular Fibrillation to Extreme Heart Failure.

The light thrown by this case led me to search for other cases with this irregular action, and to watch other patients who suffered from mitral stenosis. As a result I found the irregularity to be far from infrequent, and I was so fortunate as to detect its onset in a number of instances. This led me to a study of heart failure in its relation to this condition. I worked also to discover the best means of combating the trouble. There followed the discovery that probably 80–90 per cent. of all cases of heart failure with dropsy and enlarged liver are due to auricular fibrillation. Further I convinced myself and others that the astonishingly good effects of digitalis are practically confined to patients with this irregularity.

Effect of Fibrillation of the Auricle on the Ventricle.

The normal rhythm of the heart (due to the production of a stimulus in the sino-auricular node at the mouth of the superior vena cava) has already been described. When the auricle passes into fibrillation it ceases to contract as a whole, and the orderly discharge of the stimulus to the ventricle is interrupted. The twitching muscle pours forth a rapid series of irregular stimuli, so that the auriculo-ventricular node is assailed by a great number of weak demands. Only certain of these—the actual number would seem to depend on the susceptibility of the auriculo-ventricular node and the bundle—pass through to the ventricle. The ventricular contraction is a normal one, but as a rule the rate of the ventricle becomes greatly increased, and the rhythm very irregular (see Fig. 5, THE LANCET, June 11th, p. 1235). There may, however, be exceptions.

Thus, in a case in which for many years there had been a delay in the response of the ventricle to the auricle, due to a slight damage of the auriculo-ventricular bundle ("partial heart-block") and in which the rhythm was regular and the rate about 60, the onset of auricular fibrillation did not quicken the pulse. It did produce the characteristic irregularity. This patient was not conscious of the onset of the abnormal rhythm, and his response to effort was not impaired. In the vast majority of cases, on the other hand, the onset is not only accompanied by a great increase in rate, but also by a great limitation of the field of response to effort. Indeed, in eliciting the history of the condition one can often determine the moment of onset with great accuracy, for the patient will state that he was quite well until some effort—for example, hurrying up a hill—induced marked breathlessness. From that time onwards he has been breathless on slight exertion.

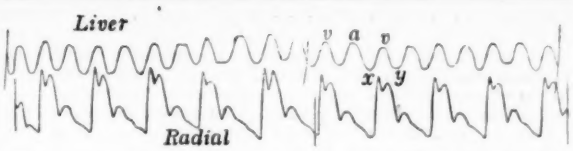

FIG. 13.—Simultaneous tracings of the liver and radial pulses in a patient with mitral and tricuspid stenosis, before the onset of auricular fibrillation. There are two waves *a* and *v* during the cardiac cycle. (See Fig. 14.)

From the fact that the heart beats are not only small and rapid, but also irregular, it can readily be understood how ineffective the circulation is bound to become (Fig. 5). Moreover, the rapid rate of the ventricle leads to exhaustion, so that heart failure speedily supervenes. This is in striking contrast to the absence of heart failure, when the rate is not increased as in the case just cited. When, in addition, there is a damaged ventricle, the rapid rate leads directly to a fatal issue.

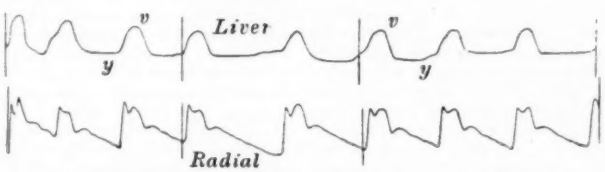

FIG. 14.—Simultaneous tracings of the liver and radial pulses after the onset of auricular fibrillation. There is but one wave now in the liver pulse during the cardiac cycle, the wave *a* having disappeared, and the presystolic murmur has also disappeared, and the rhythm is irregular. (Compare with Fig. 13.)

Principles of Treatment in Auricular Fibrillation.

Recognition of the fact, then, that the rapid rate leads to exhaustion of the heart muscle, and so to an inefficient circulation, gives us the data for applying a rational treatment. We must slow the heart. For even with auricular fibrillation the circulation is efficiently maintained when the rate of contraction is slow.

Study of the effects of digitalis and strophanthus in these cases showed that those drugs act by diminishing the rate in a most remarkable manner. I have repeatedly seen patients in dire extremity from heart failure (dropsy, orthopnœa, Cheyne-Stokes respiration), with a pulse-rate of from 120 to 150, lose all their distressful symptoms under digitalis, and that speedily. The rate would fall to 60 or 70 beats. Relapses, too, which are apt to occur, could be warded off for years by the judicious administration of that amount of the drug which maintained the rate at from 60 to 80 beats when at rest.

The Recognition of Auricular Fibrillation by the Unaided Senses.

The symptom by which the clinical observer can most readily recognise auricular fibrillation is the character of the pulse. The pulse rhythm is usually irregular, and this irregularity is of a very disorderly kind (Fig. 15, also Figs. 5, 7, and 14). In this respect it differs from most other arrhythmias. These, as we have seen, possess distinctive characters of their own. Thus, the irregularity in the heart of the young is marked by the fact that variations in rate coincide with phases of respiration; the intermittent pulse, due to extra-systoles, by the fact that the irregularity breaks in on an otherwise regular rhythm. In auricular fibrillation the length of the pauses between the beats is, as a rule, continually changing, the pauses between two succeeding beats seldom being of the same duration; moreover, succeeding beats are rarely of the same strength. The character of these phenomena will be made clear by the radial tracings in Fig. 15. These tracings were taken from five patients.

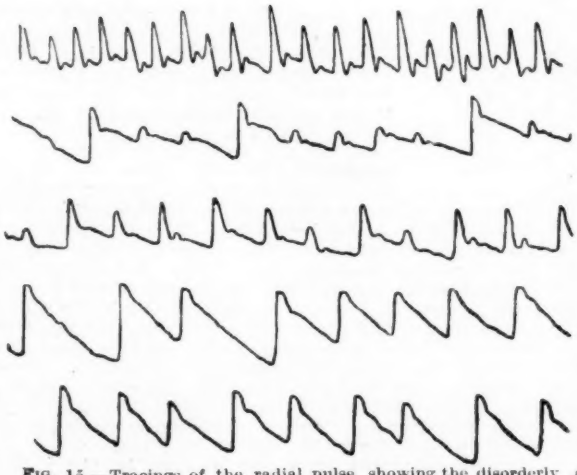

FIG. 15.—Tracings of the radial pulse, showing the disorderly irregularity characteristic of auricular fibrillation from five different patients.

Murmurs of Mitral Stenosis in Auricular Fibrillation.

I have already stated that, with the onset of auricular fibrillation, all evidences of auricular systole disappear. Thus in a patient with mitral stenosis, whose condition has been revealed by the presence of a presystolic murmur alone, or by a presystolic murmur accompanied by a diastolic murmur, auricular fibrillation causes the presystolic murmur to disappear. The diastolic murmur remains, for the reasons already given. When the heart is beating rapidly the diastolic murmur may fill up the interval between the second and first sounds, and physicians are then apt to assume that it is presystolic in type. If, however, the heart be auscultated during one of the long pauses which frequently occur, or after the rate has decreased—for example, owing to the administration of digitalis—the murmur will be found to follow the second sound, and there will be noted an appreciable silence before the first sound occurring at the exact moment at which the presystolic murmur was wont to be heard (see Figs. 6 and 7). This is a feature which even experienced clinicians seldom detect unless they specially seek for it.

Bearing of Auricular Fibrillation on Pregnancy.

My experience of pregnancy in women with auricular fibrillation is limited to half a dozen cases. This may seem a small number, yet if it be considered that these cases occurred at a time when I had a midwifery practice of 40 or 50 confinements a year, it will be seen that altogether there must be a considerable number. All my cases gave a history of rheumatic fever; all had mitral stenosis. In each case the advance of pregnancy was accompanied by increasing signs of heart failure—limitation of effort and œdema of the lungs as already described. In all but one, premature labour set in between the sixth and seventh months. All lived through the confinement, but none ever recovered the same degree of health as was enjoyed before the pregnancy. I actually saw none patient in two pregnancies. She made a fair recovery. In the others heart failure increased gradually till they died within two years of the pregnancy.

Judging by my own experience, I believe that though pregnancy does not produce an immediately fatal heart failure, it so weakens the organ that it hastens the fatal issue. In saying this, I recognise that my experience is limited. At the time at which five of these cases were under my care I had not recognised the nature of auricular fibrillation, nor had I learned how to give digitalis in this condition. In the one case which occurred after I had acquired this knowledge, I think I was able to help. The matter, however, requires far more investigation than I have been able to undertake. I leave it here, trusting that others, fortified by the knowledge now available, will carry out a more thorough inquiry.

In the meantime I would lay it down that auricular fibrillation is a bar to pregnancy. Should pregnancy have occurred, careful observation of the patient must be maintained. If the pulse rate exceeds 80 when at rest, digitalis should be given and continued until the rate falls to between 60 and 70 per minute. If œdema of the lungs, orthopnœa, or enlarged liver supervenes, the pregnancy should be terminated forthwith.

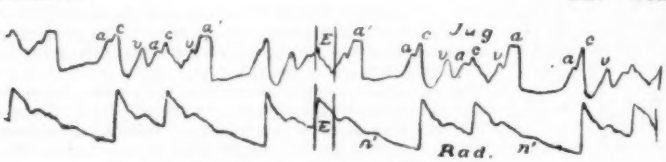

FIG. 18.—Shows the same thing as Fig. 17.

Paroxysmal Tachycardia.

There are other abnormal rhythms which may have to be considered in relation to the pregnant state. The most common of these is a condition allied to auricular fibrillation and known as auricular flutter. In this condition the auricle does not contract in the usual manner, but beats ineffectively at a very rapid rate—usually about 300 times a minute. The ventricle does not, as a rule, respond to every beat of the auricle; it often responds only to every second beat, and sometimes to a varying number of beats, so that the pulse is slow and irregular.

The condition usually arises in paroxysms. The patient is conscious of a sensation which suggests that her heart is "running away" at a great rate. This is accompanied by a sense of prostration. The paroxysm may last for a few minutes or a few hours. It subsides suddenly. A sudden onset and a sudden offset—the latter being followed by one or two forcible beats—are thus distinguishing features.

This form of paroxysmal tachycardia may occur

FIG. 16.—Simultaneous tracings of the jugular and radial pulses. The jugular pulse is of the auricular form.

with different types of heart trouble. Its significance in pregnancy should, therefore, be considered in relation to the presence or absence of disease. When there are no signs of disease, and the patient is well and strong between the attacks, the condition is not one of much importance. This is likely to be the state of affairs in young subjects. In the elderly, beyond the child-bearing age, the arrhythmia is often associated with disease of the myocardium, and may then be of serious significance. We may note, however, that paroxysmal tachycardia is not infrequently associated with mitral stenosis in quite young people. In such cases the physician should take into consideration what I have said in connexion with that form of disease. The presence of auricular flutter naturally adds to the gravity of the condition.

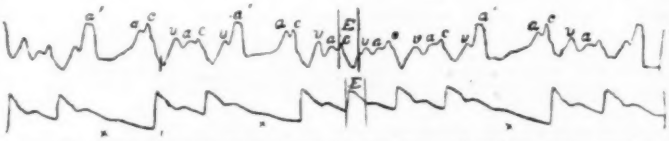

FIG. 17.—Simultaneous tracings of the jugular and radial pulses during irregular action of the heart. The auricle preserves its rhythm, there being a larger wave (*a'*) during the pause in the radial pulse. At this time there is a premature contraction of the ventricle, so that the auricular and ventricular contractions occur at the same time, and the contents of the auricle, not being able to enter the ventricle, are thrust back into the jugular, causing the larger wave *a'*.

I have had no experience of this abnormal rhythm as a complication of pregnancy. The opinion I have given is the result of the study of heart failure in connexion with auricular flutter in a large number of cases, some of which I have watched for many years.

Description of a Case of Abnormal Heart Action with Pregnancy.

I have had one case of another and rarer form of abnormal rhythm. This woman went through her pregnancy unscathed. It is partly on the inferences which I drew from her that I formed the views I have just stated.

The woman (aged 35) was pregnant with her first child. For several years previously she had suffered at times from breathlessness and irregular action of the heart. During the few weeks in which she was under my care (at the eighth month of pregnancy) the pulse was usually irregular—the degree of irregularity varying very much. When the heart was irregular the venous pulse was always large, while when the heart was regular it was barely perceptible, so much so that it was with difficulty that I could get a tracing of it (Fig. 16). Figs. 17 and 18 show the different characters of the irregularity. In Fig. 17 there are long pauses in the radial pulse (*x x x*). During these the auricular wave *a'* becomes large, an evidence that at this time the auricle and ventricle contracted together. The ventricle, however, was in systole (an extra-systole), and so the contents of the auricle could not be sent into the ventricle. They were therefore thrown back into the jugular vein. Hence the large wave *a'*. The extra-systole does not appear in the radial pulse. It is a premature contraction of the ventricle (a ventricular extra-systole). This was so small

that it did not send any wave into the radial artery. Occasionally this heart would break into a series of rapid beats as shown in Figs. 19, 20, and 21. Thus there was produced a form of tachycardia whose origin is of the same nature as that of the premature ventricular beats in Figs. 17 and 18. I did not attend this patient in confinement, but I heard that she passed through it without trouble; some years after I heard that she was quite well.

THE NEUROTIC HEART.

By this term I refer to a very distinct type of heart affection in which the symptoms are due mainly to disturbances of sensation. The patients complain of pain in the left chest, usually under the breast. The pain is of a dull aching character, accompanied sometimes by "stabs." The aching varies in severity, slowly increasing and decreasing. It may last for hours; or, again, the patient may be conscious of it for days. It is not usually immediately aggravated by effort; but it may appear some hours afterwards, or, if present before, may become worse when effort is undertaken. Only occasionally is it provoked to a severe degree by effort. Attacks of great severity resembling attacks of angina pectoris sometimes arise. In these instances doctors may alarm their patients and their patients' friends by telling them that the condition is in fact angina pectoris.

It should be recognised further that these attacks of pain may come on with great severity in the absence of any apparent provoking cause.

Site of Pain and Associated Phenomena.

The distribution of the pain, while mainly confined to the left chest, may extend also into the arms and up the side of the neck. The attacks are often preceded or followed by a sense of chilliness, or cold. They are frequently accompaniedby shivering resembling a rigor. There is usually present hyperalgesia of the skin and deeper tissues of the chest wall. This can be elicited by lightly pinching or pressing the left breast. In a less degree the right breast is also tender to pressure. The aching of the breast and its tenderness may lead the patient to think that there is some disease in this region.

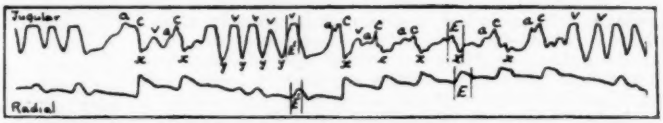

FIG. 19.—Shows a number of normal beats, with the usual waves, *a*, *c*, *v*, in the jugular, and a series of abnormal beats, small and rapid, with the waves *v* in the jugular. These abnormal beats are due to a series of independent ventricular contractions.

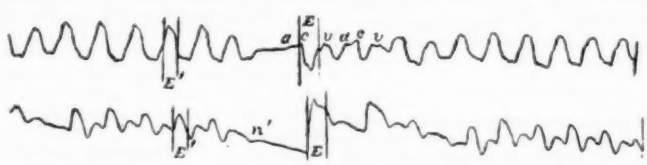

FIG. 20.—Shows two normal beats in the centre, all the rest are independent ventricular beats.

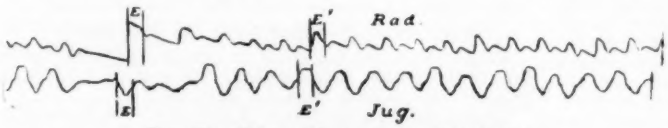

FIG. 21.—Shows only one normal beat (*E*).

These patients are liable to attacks of palpitation; and the heart's rate is sometimes unduly increased in response to effort or excitement.

When asked what sensations stop them while walking on the level, they usually reply: "A feeling of exhaustion, with a desire to sit or lie down."

Relation of the Neurotic Heart to Physical Signs.

The phenomena described above occur frequently in women; and the hearts of these women show, as a rule, no abnormal physical sign. In some, however, a systolic murmur may be detected, or an irregularity of the respiratory type or extrasystoles. The size of the heart may be slightly increased.

Those abnormal signs do not in any sense add to the gravity of the state; they are merely incidental. The condition, in short, is not due to disease of the heart—though it may be associated with disease, as, for example, mitral stenosis. It is due to some agent which increases the excitability of the whole nervous mechanism of the heart. Pregnancy can safely be undertaken by these people. It often does them a great deal of good.

Conditions Predisposing to the Neurotic Heart.

There are three conditions which induce this form of cardiac weakness: (1) toxic states; (2) overwork; (3) sexual disturbances.

Toxic States.—The source of poisoning is most frequently an intestinal trouble. In every case of this sort a careful inquiry should be made into the condition of the digestive organs. The abdomen should be examined for signs of cutaneous hyperæsthesia and muscular rigidity. The presence of these latter is a sure indication of some old-standing trouble in this region. Appendicitis, gastric ulcer, adhesions around the cæcum or gall-bladder, and intestinal stasis, are among the most common conditions found. Sometimes the source of infection may be an abscess in some other part of the body, as, for example, in the antrum or at the roots of the teeth.

Overwork.—Women who have too long hours of labour, with little sleep, are apt to develop nervous hearts. The long nursing with disturbed nights of an ailing parent, husband, or child by a woman who has to do her housework or earn her living is an illustration in point. Any form of fatiguing work with mental worry is apt to induce the condition.

Sexual disturbances.—When no apparent cause which would account for the condition can be found, inquiry should be made into the sexual functions. For it is a fact that this type of heart is apt to be engendered in otherwise healthy young women who are married to impotent men or men who are only capable at long intervals.

One of the most extreme cases of this type which I have seen was a woman of 26, who had been married for two years to an impotent old man. Another case was a young woman who had had no intercourse with her husband, with whom she slept, because her doctor, a maiden lady of mature years, had warned her that this would be dangerous on account of her weak heart. Complete recovery followed the assumption of normal relations with her husband, and pregnancy followed.

The neurotic heart is also frequent among women, whether married or not, who indulge in masturbation. The worst case I have seen was a pretty young Jewess, whom I examined some weeks after the birth of her first baby. Not only were there present the signs of neurotic heart already described, but the heart rate was persistently increased to 130–150 beats per minute. She confessed to indulging in the habit six or eight times a day.

While dealing with this subject I may refer to another matter which bears a relation to it—the danger, or supposed danger, of coitus to women with damaged hearts. The domestic happiness of married couples is often marred by the injudicious advice of doctors who have, on account of fears as to the hearts of patients, forbidden intercourse. I have just cited an instance of the unwisdom of this advice; I have found it given so frequently that I wish to state that I know of no heart condition which should act as a deterrent when the woman feels competent. It is a matter for the woman, and not the doctor, to decide. If she finds that it comforts her, as it often does, and if she experiences afterwards nothing but a passing exhaustion, there is no ground for objection, however affected her heart may be.

CONGENITAL DEFECTS OF THE HEART AND PREGNANCY.

I have not had much experience of the complications of pregnancy by congenital defects of the heart. The opinions which I express, therefore, are based only on a knowledge of general principles. I would suggest that in doubtful cases doctors should be guided by a recognition of the state of the heart's efficiency. When the organ is enlarged, or when there is cyanosis or clubbing of the fingers, the response to effort will be so limited that it will readily be seen that pregnancy is a danger and should be avoided. When, on the other hand, the heart is normal in size, or only slightly enlarged, the response to effort good, and no cyanosis present, then, notwithstanding any physical sign—such as a murmur—which may be found, marriage and pregnancy can be allowed.

Types of Congenital Murmurs.

There are two congenital murmurs which stand out prominently. The first, and most common, is a loud, rough, systolic murmur, heard all over the heart, the area of maximal intensity of which it is difficult to determine. I do not know for certain where this murmur arises, though I lean to the view that it has its source in a small communication between the ventricles. I have met it so frequently in the young, and so rarely in the adult, that I suspect that it disappears with growth. I have, however, never been able to follow my cases long enough to see.

Patent Ductus Arteriosus.

The other murmur is due to a patent ductus arteriosus. It is a remarkable murmur, and when once recognised can always be identified easily. The tube connecting the aorta and pulmonary artery remains in these cases patent after birth. The pressure in the aorta being higher than that in the pulmonary artery, the blood passes through during the whole of the cardiac cycle and produces a continuous murmur, which is loudest at the beginning of systole, and which diminishes in loudness during diastole. It is always accompanied by a thrill over the second and third ribs on the left side. At this place the murmur is loudest.

I have only seen one case of patent ductus arteriosus in a pregnant woman. In this instance I was called into consultation to decide whether the pregnancy should be allowed to proceed and whether the patient should take chloroform. I had no hesitation in recommending that the pregnancy should be allowed to go to full term, and that chloroform should be freely given. The woman came through her confinement, and through a subsequent one, with no unfavourable incident.

I have seen a considerable number of cases of patent ductus arteriosus in the young, but only three or four in persons over 20 years of age. I have not been able to follow up my cases; but it occurs to me that this condition also may disappear in adult life.

THE MANAGEMENT OF CASES OF PREGNANCY WITH HEART DISEASE.

With an Efficient Heart.

The first duty of the physician is to decide whether or not there is any reason to expect heart failure if pregnancy occurs. The presence of abnormal signs gives no indication of the functional efficiency of the heart. That must always be estimated on the lines laid down above. If the functional efficiency is not impaired to an extent greater than that occurring in a normal pregnancy, no steps need be taken and no anxiety felt.

When, however, a woman with undoubted heart disease, such as mitral stenosis, does become pregnant the pregnancy should be allowed to continue only so long as no marked signs of heart failure are present. Such exercise as can be undertaken in perfect comfort may be permitted. But any distress, particularly breathlessness, is an indication that effort must cease.

With an Inefficient Heart.

The patient should be examined weekly for signs of heart failure, particularly for signs of œdema of the lungs as already described. If crepitations at the bases of the lungs appear, persist, and tend to increase, they may be taken as evidences of the onset of heart failure. There will also, in such cases, be present a great limitation of the field of response to effort—breathlessness being induced on slight exertion. The patient should be confined to bed or couch, and her activities reduced to a minimum. She should be encouraged to sit up or lie propped up in bed, since lying down, by restraining the movements of the ribs, tends to hamper the circulation in the bases of the lungs. At times, during the day, she should be made to breathe deeply, in order to assist the right heart in expediting the flow through the lungs.

Management of the Labour.

If heart failure is kept in check the pregnancy can be allowed to go to full time. If often happens that labour sets in, in these cases, about the seventh month; so that, as a rule, the birth is accomplished with little stress on the heart. It was my custom to give chloroform at an early stage of labour—light anæsthesia at first. My object was to restrain the "bearing down," which taxes the heart heavily. When the labour had advanced so far as to justify the use of forceps I pushed the chloroform to complete anæsthesia and delivered. In this way the straining of the last stage was avoided.

I gave chloroform freely to my midwifery cases, and never had any trouble. It is possible that "twilight sleep" may be better than chloroform, but I have no experience of it.

Indications for Shortening the Pregnancy.

When the heart failure is so extreme as to threaten life, intervention is necessary. Premature labour or miscarraige should then be induced.

Those patients in whom I induced miscarriage in the third or fifth month suffered from mitral stenosis. I had attended them in previous confinements which they had come through with difficulty—the heart failure being so extreme that it was manifest that another pregnancy would probably prove fatal. In nearly all my cases of mitral stenosis which carried to the later months premature labour set in spontaneously.

Medicinal Treatment.

Medicinal treatment by drugs of the digitalis group is not satisfactory unless auricular fibrillation is present. I have rarely found any benefit from these drugs in heart failure in mitral stenosis, so long as the rhythm remained normal. If the rate of the heart is much increased, however, digitalis may be given a trial, for sometimes it does slow the heart when the rhythm is normal. It is in auricular fibrillation that the good effects of the drug are obtained. Here heart failure is nearly always

associated with a rapid rate, many of the beats being ineffective. Digitalis slows the heart, and the individual beats become strong and effective. The circulation is thus at once greatiy lmproved. When the heart responds to digitalis, and the rate falls to 70 or 60, the drug should be suspended, and only resumed when the rate begins to increase. The quantity sufficient to keep the rate about 70 should be determined by giving and withholding the drug during a period of a few weeks. Thereafter the patient should continue for the rest of her life to take that quantity which keeps her heart beating at a moderate rate.

I have found the tincture of digitalis so satisfactory that I rarely recommend any other form. The dose should be fifteen drops four times a day, and the effect should be looked for on the fourth to the seventh day. The symptoms of overdose are nausea or vomiting, or diarrhœa, or a tight feeling of distress across the chest or a great fall in the rate. When any of these symptoms appear the drug should be stopped at once. It should be cautiously resumed when they disappear. In this way digitalis can be given without fear of untoward result.

General Management.

It is needless to dwell upon the general management of such cases. Patients must, of course, avoid conditions which throw a strain upon the heart—as, for example, mental worry, straining at stool, and digestive troubles. In regard to digestion, flatulence is often a distressing complication. It can best be avoided by taking meals in a dry state so as to compel thorough mastication. Meals should also be small in quantity and frequent.

Sleep must be obtained during the pregnancy. If it does not come naturally, then the milder hypnotics should be given, beginning with the bromides. If these fail, some of the tar products should be tried. If, in spite of these, sleeplessness persists, chloral or opium, or one of its derivatives, may be cautiously administered.

SUMMARY.

As the danger attending pregnancy in women with heart disease is the occurrence of heart failure, the physician must keep clearly before him the symptoms by which this can be recognised.

The absence of a clear conception of the nature of these symptoms has too often led to a misunderstanding of their significance. No sign manifested by the heart itself gives information as to the functional efficiency of the organ, and consequently the signs of heart failure must be looked for in other directions and more especially in those structures whose blood-supply is likely to be reduced by the weakening of the circulation.

Extreme heart failure is shown by such signs as dropsy, enlargement of the liver, œdema of the bases of the lungs, or cyanosis.

Early heart failure may be revealed by no sign when the body is at rest, and may only be discovered by distress evoked when some effort is made which the patient was wont formerly to perform in comfort.

The signs of distress, so far as women in the child-bearing period are concerned, are breathlessness and palpitation. Pain on effort may be present in certain cases of mitral stenosis and aortic disease; but, as a rule, the pain of grave heart failure is a sign which occurs much later in life.

From this it follows that no single sign shown by the heart itself, however abnormal it may seem, should be a bar to pregnancy.

Systolic murmurs, no matter in which area they are loudest, should never be a cause of anxiety in pregnancy. If they occur in hearts which show no other abnormal sign, and if the patient's response to effort is good, they should be ignored. If they are associated with other signs of heart disease, the prognosis should be based on these other signs and not on the systolic murmurs.

The same rule applies to the irregular actions of the heart due to respiratory arrhythmia and extra-systoles.

In women with easily excitable hearts, who suffer at times from pain of varying degrees of severity (the neurotic heart or the toxic heart), when the organ is normal in size, or only slightly enlarged, the heart trouble constitutes no bar to pregnancy. This applies whether systolic murmurs are present or not.

The form of heart disease which gives most occasion for anxiety in pregnant women is mitral stenosis. This usually has followed an attack of rheumatic fever. In such cases great care must be taken to differentiate between dangerous and not dangerous forms of the malady. The latter include instances in which the cicatrising process, which produces the stenosis, is stationary or is only progressing slowly. Such slow progress is shown by the character of the murmur. If there is present ten or fifteen years after the causative attack of rheumatic fever only a presystolic murmur, and if the heart's size is normal, its rate regular, and the response of the patient to effort good, then pregnancy may be undertaken with fair prospect of safety.

If, on the other hand, there is present, within a few years of the causative attack of rheumatic fever, a diastolic murmur as well as a presystolic, there will be danger. This will be particularly the case when there is evidence also of the heart muscle being damaged—i.e., enlargement of the organ and much distress on effort. When in addition to the mitral stenosis there is fibrillation of the auricle, pregnancy should be forbidden. If pregnancy has taken place, then the case should be watched; and if grave signs of heart failure occur, the pregnancy should be terminated.

In cases of aortic regurgitation, if the heart is normal in size and the response to effort is good, pregnancy may be undertaken. If, on the other hand, the ventricle is much hypertrophied, and there is a marked "Corrigan" pulse, the probability is that the heart will be so permanently impaired that it will cripple the patient severely if she gets over her confinement.

THE EPIDEMIOLOGY OF MEASLES IN A RURAL AND RESIDENTIAL AREA.*

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SINCE February, 1902, measles has been compulsorily notifiable in the landward portion of Renfrewshire. This area is administered by one medical officer of health, working in two districts, first and second. The first district is largely suburban, residential and industrial, with rapidly increasing population, while the second district is mainly rural and the population has increased slowly. The circumstances have therefore been fairly suitable for studying not only the influence of notification and administrative measures on measles under different conditions of environment, but also any features of the epidemiology of measles which may be peculiar to populations of low density. The period of 20 years, 1893 to 1912, has been selected for this purpose, and the writer is indebted to Dr. A. Campbell Munro, consulting county medical officer, for access to the records of these years and for guidance in their compilation.

It may be said at the outset that measles has been seriously regarded in Renfrewshire. Notification has not been an end in itself, but only the beginning of concerted preventive measures and propaganda

* Being the substance of a paper read before the Epidemiological Section of the Royal Society of Medicine on Feb. 25th, 1921.

aiming at control of the disease. The writer is satisfied, from an intimate knowledge of the administration in Renfrewshire, that every practicable means of controlling measles recognised during the period under review was applied wholeheartedly.

In a previous paper [1] an effort has been made, with limited success, to demonstrate the effect of notification in Renfrewshire, by comparing the deaths from measles there and in adjoining administrative areas. So far as they went the figures quoted indicated that notification was an advantage; but the absence of the data which notification affords is an obstacle to any accurate comparison of the behaviour of measles in an area where it is not in force with one in which it is. In the course of the present inquiry any internal evidence for or against the value of notification has been sought. The main purpose, however, is to put on record the observed facts of the incidence and fatality of measles in an area of this character. No detailed information from a county area appears to be available in medical or epidemiological literature and the importance of obtaining it justifies notification, from the scientific point of view, even if no other benefit can be proved.

Periodicity.

If the monthly incidence of measles is traced in Renfrewshire throughout the years since 1891, the long and short waves, now recognised as characteristic features of the disease, are clearly seen. The long wave seems to have a period of about 20 years, although the duration of the observations is not sufficient to make this certain. The biennial period is very pronounced at the summit of the long wave, but tends to be lost in its trough. The usual spring-summer incidence occurs. The form of the waves fits fairly well Brownlee's theory of recurrent vitality of the virus at intervals of nearly, but not quite, two years.[2]

The practical point, however, is that there is fair correspondence between the behaviour of measles in the two districts and in the adjacent city of Glasgow. There is therefore fair ground for assuming that a common strain or strains of measles virus inhabit these areas and that further comparison of the statistics of measles between them is permissible.

Death-Rates.

In Table I. the mean death-rates from measles in certain periods of ten years are shown. The mean death-rate from measles in Renfrewshire has not been high in any of these periods, and it is also apparent that notification was not followed immediately by any decline. But the marked fall in both districts during the last ten years is striking in view of the fact that several years of this period were included in the summit of a long wave when a high death-rate might have been expected. It remains to be seen whether this decline is attributable to change of incidence or of fatality.

TABLE I.—*Mean Annual Death-Rates from Measles per 1000 of the Population in Certain Decennia.*

—	District I.	District II.	County.
1881–1890 ..	0·26	0·20	0·24
1893–1902 ..	0·27	0·21	0·25
1903–1912 ..	0·19	0·10	0·16

Case-Incidence.

The mean case-rates in two periods of ten years during which notification was in vogue are shown in Table II. The case-rate has declined in both districts, but to a much less extent than the death-rate has fallen. The latter decline is therefore not explained by the former. The fact, however, that the case-rate has fallen at all is significant in view of the fact, already mentioned, that the second period was exceptionally favourable to high incidence.

TABLE II.—*Mean Annual Incidence of Measles per 1000 of the Population.*

—	District I.	District II.	County.
1893–1902 ..	22·13	18·68	20·73
1903–1912 ..	20·24	17·04	19·21
1893–1912 ..	20·99	17·83	19·87

It would seem to be fair to give at least some of the credit to notification and preventive measures.

Fatality.

For the same periods of years the mean case mortalities are shown in Table III. A marked decline in fatality has occurred which appears to be of real significance so far as errors of chance are concerned and which accounts for the difference between the fall of the death-rate and of the case-rate. There may have been some failure of notification in the earlier years which would have the effect of exaggerating the difference of fatality and of diminishing the difference in the case-rates. In the opinion of the writer, this fallacy is not great in the Renfrewshire figures and the main feature of the period of notification, preventive measures, and propaganda has been great diminution of the fatality of measles.

TABLE III.—*Mean Fatality per 100 Cases.*

—	District I.	District II.	County.
1893–1902 ..	1·23	1·14	1·20
1903–1912 ..	0·92	0·60	0·83
1893–1912 ..	1·05	0·88	0·99
ϵ_{12}	0·16	0·21	0·12

It will be observed that the fatality of measles is lower in the rural second district than in the first, which is more densely populated. The comparison may be carried beyond the county, as in Table IV.

TABLE IV.—*Fatality per 100 Cases of Measles in Several Districts.*

Urban District, 1892–4[3]	6·1
Glasgow, 1908[4]	5·1
Edinburgh, 1880–1901	3·5
Aberdeen, 1883–1902[5]	3·3
American States, 1914[6]	1·7
Willesden[7]	1·3
Renfrewshire, 1893–1912	1·0

Roughly, the fatality falls as the density of population diminishes. Many factors have to be considered such as age-distribution of the population, social status, higher resistance to disease of the rural child, immunity from complications and varying efficiency of administration, and some of these will be dealt with later. But some other explanation seems to be required to account for the variation of fatality not only between town and county but also of excessive fatality in isolated epidemics occurring in institutions, in armies and in "unsalted" populations many of which are recorded in literature.

As illustration, reference may be made to the behaviour of measles among the soldiers of the Highland Division at Bedford in 1914–15, a chart of which has been kindly lent to the writer by Colonel Dewar. There is no evidence that measles was more than usually fatal to the civilian population at that time, but its mortality among these susceptible Highland soldiers was 12·4 per cent. The first cases were infected from civilians and the fatality in October (8 cases) and November (79 cases) was nil and 2·53 per cent. respectively. Later, however, when other soldiers were infected from these men the fatality rose to 13·82 per cent. in December and 15·62 per cent. in January. It is not sufficient to

say that the "unsalted" character of this Highland population was the cause of the excessive fatality; that is not the experience among similar immigrants in Glasgow infected at random from the general population. Unhygienic conditions for the patients probably did exist but not more so in the later stages.

It is suggested that the explanation tentatively given by Whitelegge[4] is the correct one—viz., that the virus of measles is intensified under circumstances which favour rapid transmission from person to person in a highly susceptible population. As the opportunity for rapid transmission is clearly greater in cities and towns than in rural districts, the difference of fatality in such areas may also be due to this cause.

Incidence and Fatality According to Age.

It has been shown that the fatality of measles, irrespective of age, has been higher in certain urban areas than in the county of Renfrew. This might be due partly to a difference in age-incidence. The point is illustrated in Table V. If these readings are

TABLE V.—*Mean Annual Case-Rates per 1000 of the Population Living at Several Ages.*

Age.	Renfrewshire.	Aberdeen.	Glasgow (1908).
–1	41	44	73
–2	81	86	142
–3	94	86	174
–4	96	79	166
–5	99	75	165
5–10	75	49	49
10–15	13	4	
15 and over ..	1·0	0·6	0·6

charted the contrast between incidence in town and county is well brought out. In the county the age of attack is delayed. Expressed otherwise, the proportion of all cases of measles which occurred at ages under 3 years (the most fatal) was 24·75 per cent. in Renfrewshire, 33·32 per cent. in Aberdeen, and 34·50 per cent. in Glasgow. This, however, explains only partly the difference in fatality already discussed.

It should be noted that in Renfrewshire, as in Aberdeen, there is a sudden excess of incidence in the sixth and seventh years of life—i.e., at the age of entering school. This indicates the effect of schools in exposing susceptible children to measles and justifies the attention given to this mode of transmission in Renfrewshire, where closure of infant classes has been regularly applied whenever departmental inquiries have shown that such classes were likely to have been infected.

If such methods were successful they should in course of time delay the age-incidence of measles. Table VI. has been prepared to test the result in

TABLE VI.—*Mean Annual Case-Rates per 1000 at Several Ages in Separate Decennia.*

Age.	District I.		District II.	
	1893–1902.	1903–1912.	1893–1902.	1903–1912.
–1	50	53	35	39
–2	85	101	84	71
–3	103	105	88	78
–4	101	108	91	84
–5	106	114	91	86
5–10 ..	86	81	70	65
10–15	13	11	15	17
15–20	3	2	5	3
20 and over ..	1	1	1	1

the two areas of Renfrewshire. In the first place, this table shows that the more rural district has a lower incidence at all ages under 10 years but higher above that age. In this district, too, there has been a decline in the case-rate at ages under 10 in the second decennium and a slight transference to the age period 10–15. In the first district, however exactly the opposite movement has occurred, the younger children being more heavily attacked. The contrast may be expressed briefly in terms of the mean age of all cases under 20 years of age. In the first district the mean age fell from 5·35 years in 1893–1902 to 5·16 years in 1903–1912, while the corresponding figures for the second district were 5·94 and 6·09. The conclusion may be drawn, therefore, that in this important respect the efforts of the Health Department have failed in the first district but have had some success in the second. The further inference can be drawn that the greatly reduced fatality in Renfrewshire has not been mainly due to more favourable age-incidence of the disease in the second ten years.

The fatality of measles at various ages of life in different places is shown in Table VII. The general

TABLE VII.—*Fatality per 100 Cases at Several Ages.*

Age.	Renfrewshire.	Aberdeen.	Glasgow.	Willesden.
–1	4·3	13·9	16·2	2·8
–2	4·6	10·0	18·5	5·0
–3	1·4	3·4	5·3	3·0
–4	0·5	1·6	2·5	1·5
–5	0·2	0·9	1·3	0·2
5 and over	0·2	0·5	0·7	0·3

trend is similar in the four places, but at each age fatality in the county is much lower than in the large cities, and is approached only by that in Willesden. It is evident that whatever influences in the less densely populated areas conduce to low fatality are exerted equally at each age of life, and the comparatively low mortality in Renfrewshire is not entirely, or even mainly, explained by favourable age-distribution of the cases.

Influence of Social Condition.

For want of a better measure of social condition the size of house occupied has been adopted as in other similar inquiries.[4 5] So far as incidence of the disease is concerned the population in small houses is most heavily attacked. For instance, for the years 1910, 1911, and 1912, the rates per 1000 of the population were 28 in one-apartment houses, 36 in two-apartment, 19 in three-apartment, and 13 in houses over this size. The records of Glasgow, which are similar, show that the difference is not entirely due to the larger population at susceptible ages in small houses, but similar census information is not available to confirm this in Renfrewshire.

That fatality is also connected with size of house is shown in Table VIII. The fatality falls consistently

TABLE VIII.—*Fatality per 100 Cases in Houses of Various Sizes.*

Size of house.	Renfrewshire.	Aberdeen.	Glasgow.
1 apartment ..	1·85	6·8	9·2
2 apartments ..	1·24	3·0	4·6
3 apartments ..	0·69	1·8	2·5
4 apartments and over	0·31	0·9	1·5

as the size of house increases. In Scotland, however, the occupants of one- and of two-apartment houses belong practically to the same social grade, and it is probable that the heavier mortality in one-apartment houses is mainly due to the larger proportion of young children among the occupants. This view is strengthened by examination of the fatality-rates among children in Renfrewshire under 3 years of age, which are 3·7 per cent. in one-apartment, 3·7 per cent. in two-apartment, 2·5 per cent. in three-apartment, and 1·1 per cent. in larger houses. The general rule, however, holds good even at these ages that fatality diminishes as social station improves.

Table VIII. also completes the demonstration that Renfrewshire's low fatality is not due to better social conditions of the patients, just as it has been shown not to depend on favourable age-distribution.

The Administrative Control of Measles.

Any measures for this purpose must have regard to the channels of infection. Children are infected in their homes or at school or at random. The fact is that most children of school age, especially in rural districts, are infected at school, and it is through the school that any measures to control measles have usually been applied.

The effect in Renfrewshire of domiciliary and of extra-domiciliary infection on the age-distribution of cases is shown in Table IX. Whereas, only 34·6

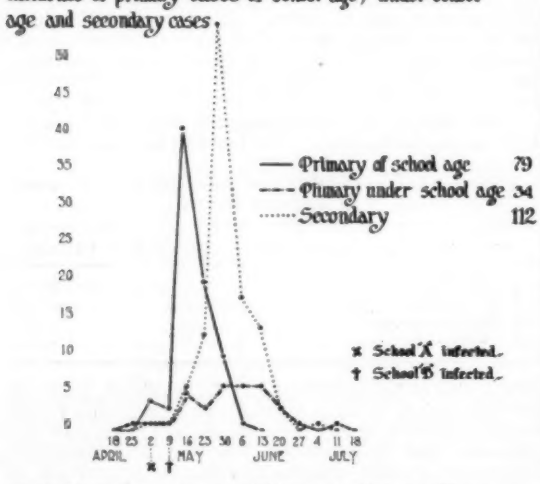
TABLE IX. — *Age-Distribution of 19,567 Cases, Showing Primary Cases in Families Separately from Secondary Cases.*

Age in years.	Primary.	Secondary.	Age in years.	Primary.	Secondary.
–1 ..	334	513	–7 ..	2058	419
–2 ..	738	1029	–8 ..	1505	306
–3 ..	900	1158	–9 ..	955	300
–4 ..	1017	1181	–10 ..	536	212
–5 ..	1180	1086	10 and over ..	1067	642
–6 ..	1740	691	Total ..	12,030	7537

per cent. of the primary cases are under 5 years of age, 65·9 per cent. of the secondary cases occur at these ages—i.e., before entering school, and the sudden aggravation of incidence among primary cases in the sixth and seventh years is further evidence of the influence of schools.

This influence is also illustrated by Charts 1 and 2, which show for two typical districts the course of a measles epidemic as it involves the school population and the children under school age. Chart 1 shows the course of an epidemic as it affected primary cases among school children, other primary cases and

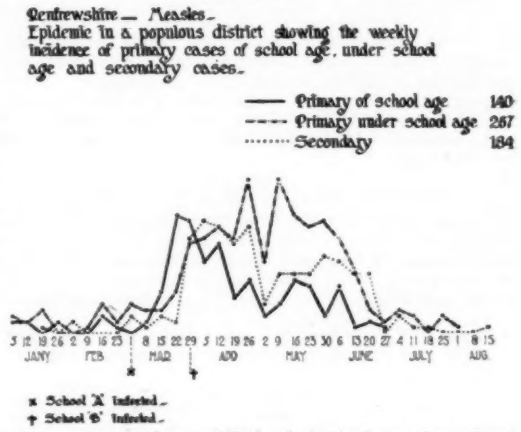
CHART 1.


Renfrewshire.—Measles.
Epidemic in an isolated village showing the weekly incidence of primary cases of school age, under school age and secondary cases.
Primary of school age 79
Primary under school age 34
Secondary 112
× School 'A' infected.
† School 'B' infected.
APRIL
MAY
JUNE
JULY

secondary cases in a relatively isolated village. In the first three weeks most of the cases were primary cases of school age, while secondary cases formed the bulk of those sickening in the last four weeks. Primary cases under school age formed a small proportion at any time. The epidemic burned itself out in eight weeks. Only half the cases were infected outside of their homes, and less than one-third of these were under school age. This form of epidemic is characteristic of the incidence of measles in isolated villages.

In the other epidemic (Chart 2) a populous area on the outskirts of Glasgow was involved. Sporadic

CHART 2.



cases were occurring until the infant class of a school was infected on March 4th, an outburst of school primary cases following a fortnight later. In another fortnight a crop of secondary cases occurred and, coincidently, the incidence of primary cases under school age increased. The fall of school primary cases was delayed by infection of a second school and the curve of secondary cases followed more or less the same course; but the primary cases under school age continued to occur in increasing numbers and formed the bulk of the latter half of the epidemic. More than two-thirds of the cases were primary and two-thirds of these were under school age. This chart is typical of the course of measles in populous places.

Clearly, it would be difficult to control an epidemic of the latter type by efforts directed at the school. Random infection plays too large a part. On the other hand, the epidemic traced in Chart 1 indicates that control through schools may be possible. Dr. Campbell Munro[9] and others have cited many instances in which they were satisfied that school closure had been effective in practice, and the statistics as to mean age, &c., quoted above suggest that such measures have been of value in the second district of Renfrewshire, where small isolated communities predominate. The results in Renfrewshire, however, which probably represent the best that can be obtained by school closure, indicate only partial success. In any case such measures can only indirectly protect the young children who constitute the bulk of the secondary cases and among whom the fatality is high.

The method suggested by Brownlee[10] of transferring exposed susceptible school children from homes where there are younger susceptible children aims at a solution of this problem. It presents serious administrative difficulties and would probably fail in populous districts, but an area such as the second district of Renfrewshire would be a suitable field for an experimental trial of the method.

Hospital treatment and home nursing can provide effectively for only a limited proportion of the cases lying ill at any one time during an explosive epidemic. In any case such methods can have little or no effect on the incidence and it has not been proved that they diminish the fatality to a greater extent than continuous propaganda as practised in Renfrewshire.

Conclusions.

1. Notification of measles has been justified in Renfrewshire, not only by the epidemiological information it has furnished, but also by its effect on mortality from the disease.

2. It has not materially affected the case-incidence in the more populous districts, but there is evidence that the rural districts have benefited also in this respect.

3. Apart from any administrative measures, age-incidence, or social conditions, there are factors rendering measles a much less fatal disease in rural than in urban areas.

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THE NECESSITY OF NOTIFICATION OF MEASLES.

By REGINALD DUDFIELD, O.B.E., M.A., M.B.

WITH our present knowledge of measles the only uses to which we can put any information of the occurrence of the disease are: (1) The segregation of susceptible contacts—the "O.M.'s"—attending the public elementary schools; and (2) the bringing into operation of any provision for the nursing of patients in their homes, made by the local authorities. I do not wish to absolutely exclude such ancillary procedure as removal to hospital, but I doubt whether such removal should not be considered as part of the nursing scheme referred to above rather than as a method of preventing the spread of infection. I pass over the desirableness of having complete information of the prevalence of the disease for the study of its epidemiology, &c.

It is customary to decry compulsory notification of measles partly on the score of expense and partly because it is alleged that notification in the past has failed to yield any useful results. The experience in Aberdeen is the stock argument brought forward against proposals to make the disease notifiable.

No one will question the importance of early information of cases reaching the officers responsible for dealing with the disease. I use the phrase "dealing with" rather than "controlling," but I do not wish it to be understood that I regard the disease as beyond control. I feel fairly confident that some method of more or less complete control will ultimately be evolved, but that question I do not propose to take up on this occasion. If compulsory notification be ruled out the only source of information on which any reliance can be placed is that obtainable through the schools. I shall show that that channel is unsatisfactory for two reasons.[1] In the first place, the cases reported form only a fraction of the full total, and in the second, the interval which occurs between the onset of the disease and the forwarding of the report of the case, is, with the present machinery, so long that the success of segregation is jeopardised and the efficiency of any provision of nursing seriously impaired. As regards segregation, I am assuming that it must be put into operation at the latest eight days after the onset of original case, or, having regard to the uncertainty of the first day of infectivity, four days after the appearance of the rash. As to nursing, I think that any delay may be dangerous, but for argument's sake I will assume that an average delay not exceeding six days from the onset, or two days after the appearance of the rash, may be hazarded with a certain degree of impunity.

Dr. W. H. Hamer advocates school reports in preference to notification, and the Ministry of Health took the same line in the circular letter of December, 1919. I have tried both systems and have come to the conclusion that notification is the only reliable source of information. Careful records of the prevalence of the disease in Paddington have been kept since 1903—from 1903 to March, 1914—based on school reports ("Form 84") and from the latter date on notification.

Notification was initiated in Paddington in March, 1914, by an Order[2] made by the Borough Council under Section 56 of the Public Health (London) Act, 1891, the Order being in the first instance for three months, but subsequently made without time limit. When the Measles Regulations of 1915 came into operation the Council's Order was rescinded (February, 1916) at the request of the Local Government Board. In December, 1919, the Ministry of Health announced that the Measles Regulations, 1915, would be rescinded as from January, 1920. The Council thereupon obtained from the Ministry a new set of Regulations, the "Measles (Paddington) Regulations, 1920." Nominally there was no interruption in notification, actually the announcement in the daily and medical papers of the rescission of the Measles Regulations, 1915, caused considerable uncertainty in the mind of the profession, and a good deal of explanatory correspondence was necessary to clear up the ambiguity.

The local records of the disease cover, therefore, 18 years, those for 11 years (1903-13) being based on school reports, and those for the remaining seven years (1914-20) on notification—both sources of information being supplemented by inquiries made by the women inspectors. During the 18 years 27,280 cases of measles have been known to me, or an average of 1525 per annum. During the first period—the 11 years of school reports—the cases totalled 12,567, with an average of 1142 per annum. For the other seven years—notification (not uniformly complete) in force—the total number of cases was 14,713 and the yearly average 2102, or 960 more than in the former period. Such figures suggest that something over 40 per cent. of the cases were not reported. I say "suggest" because I have reason to think that the disease was more prevalent during 1914-20 than in 1903-13.

A comparison of the rates of fatality recorded during the two periods is even more "suggestive" of the deficiencies of school reports. The deaths during 1903-13 averaged 43 per annum, those during 1914-20, 40, and the fatalities for the two periods were 3·73 and 1·91 per cent. In other words, the average fatality during the years of school reports was 51 per cent. above that for the notification years. So far as I am aware there is no reason for assuming that the fatality during the former period was higher than that during the latter. I incline to think that it was, on the whole, lower. In any case fatalities of 2·37, 2·68, and 2·15 per cent. were observed in 1915, 1917, and 1918.

Without giving a definite opinion as to the measure of the defect, I think it will be agreed that reliance on school reports entails a serious deficiency in the number of cases reported. Having regard to the fact that a double system of reporting—viz., by school teachers and by doctors—has been in force since 1914, it will be of interest to see to what extent the school teachers' reports precede the doctors'. During the seven years in 1522 instances—11·9 per cent. of all known cases—the school reports were received before the notification certificates. The highest

[1] There is one incurable defect associated with a system based on school reports. I refer to the intervention of the holidays, when naturally, all such reports cease.

[2] The Order made in 1914 required all cases of measles to be notified, excluding German measles. The Measles Regulations, 1915, called for notification of first cases only of measles and German measles, while the local Regulations, 1920, cover all cases of both diseases. I have limited my statistics to measles (*Morbilli*).

percentage in any year was 18·8 (1914, notification in vogue for some months only) and the lowest 7·7 (1917). In 1920 the percentage rose to 14·4, but in that year notification was rendered less complete owing to the rescission of the Measles Regulations, 1915.

Before considering the question of delay attaching to school reports it will be well to touch on that of the completeness of compulsory notification. It is frequently argued that many cases of measles receive no more than domestic treatment and that in consequence, even with compulsory notification, a fairly large number of cases will never be reported. In part that difficulty is met by the fact that parents are required to notify cases as well as medical practitioners. If a case be traced in which no doctor has been in attendance, and for which no notification has been received from the parent, a letter is addressed to the parent calling attention to the omission and warning him of the penalty to which he has rendered himself liable.

During 1920, out of 1946 known cases there were 141 (or 7·2 per cent.) which were not medically certified, being reported by school teachers only.[3] I will not venture to say that those 141 cases give the full measure of failure of notification, but I can say that I believe that very few primary cases escaped my knowledge. The 141 instances referred to above have been analysed to show the intervals between the date of onset of the disease—determined by the appearance of the rash—and the date on which the school report

Days after Appearance of Rash.

	0	1	2	3	4	5	6	7	8	9
		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
School forms ..	—	19	27	26	13	11*	8†	8	3	4
Notification ..	10	92	125	67	28	11*	7†	1	—	2

	10	11	12	13	14	17	18	19	21
	(14)	(15)	(16)	(17)	(18)	(21)	(22)	(23)	(25)
School forms ..	4	6	2	1	4	2	2	1	—
Notification ..	—	—	—	—	—	—	—	—	1

Totals: School forms, 141; notification, 347.

* Limit for segregation of "O.M.'s." † Limit for nursing scheme.

was received. The results are shown in the appended table. As a basis of comparison with compulsory notification the same facts have been taken out for 346 cases occurring in the poorest localities in the borough, where action must be prompt to be effectual.

As regards segregation of contacts, a delay extending beyond the fourth day subsequent to the appearance of the rash has been postulated as rendering segregation useless. If that be granted, it means that 56 out of the 141 cases—39·7 per cent.—were reported too late to allow the "first crop" of secondary cases to be excluded from school before they became infectious. Compare that proportion with the proportion of notified cases. In the latter group only 24 (6·9 per cent.) were reported too late, even with the inclusion of the odd case of 21 days.[4] For the school cases the average interval for the 141 cases was 4·31 days from the appearance of the rash, or over eight days from first infectivity, whereas for the notified cases the intervals were—from rash 2·3, or from first infectivity just over six days.

As regards nursing, a delay of two days after the rash has been allowed for argument's sake. Such limit includes only 46 (32·6 per cent.) of the school cases, and 227 (65·6 per cent.) of the notified cases. Comment appears to be unnecessary.

[3] These 141 cases were primary cases. There were in addition 341 secondary cases which were not medically certified, but were reported by the women inspectors.

[4] As a matter of fact, the three cases reported 7, 9, and 21 days after onset were accidents, the practitioners concerned usually reporting very promptly.

INDUSTRIAL WELFARE SOCIETY.—A conference on the organisation of industrial canteens will be held to-day (Friday), at Caxton Hall, Westminster. In the morning an address will be given by Mr. Arthur Agar, late Chief Organising Inspector of Munitions Canteens, and in the afternoon a discussion will be opened by Sir Francis Towle.

A FURTHER CONSIDERATION OF SANATORIUM CONTROLS.

BY E. WARD, M.D. CAMB., F.R.C.S. ENG.,
TUBERCULOSIS OFFICER, SOUTH DEVON.

THE discussion following my recent paper, a Controlled Study of Sanatorium Results, calls for some reply. So far nothing has appeared in the correspondence which calls for a reconsideration of my views. Single cases prove nothing; any of the numerous special treatments for tuberculosis advocated in the past have been supported by cases, most of them genuine, which seem to uphold the originator's contentions.

Dr. Campbell Thompson tells us, "Other treatment of pulmonary tuberculosis stands to sanatorium treatment somewhat in the relation that moonlight does to sunlight." Allowing for poetic licence (sunlight is to moonlight as 600,000 to 1) he means presumably that sanatorium treatment must be regarded as several times more efficient than other forms of treatment. Dr. Noel Bardswell, investigating the mortality of pulmonary tuberculosis after treatment at Midhurst, finds that patients at the average age of 33, discharged from Midhurst with the disease "arrested," have the same expectation in life as an unselected individual aged 60, while patients at the same average age, discharged "much improved," have the same expectation as an unselected individual aged 74. This, says Dr. Thompson, is sunlight. It can hardly be denied that the treatment at Midhurst is as good as any in the country. Moreover, their patients are drawn from an intelligent class, and both come from, and return to, far better surroundings than the ordinary working-class sanatorium patient. We are driven, then, to conclude on Dr. Thompson's basis, that patients at an average age of 33 who have not been to a sanatorium, but whose disease appears "arrested," will have the same expectation in life as an ordinary individual aged 130, and a patient aged 33 similarly "much improved" the same as an ordinary individual aged 212. An absurdity which suggests that Dr. Thompson's conclusion may be erroneous.

The only way to get light on this difficult matter is to control results from sanatorium treatment by other results, and this is what I have attempted to do. One critic accuses me of taking a gloomy view of tuberculosis, but I cannot accept this. If sanatorium results, as represented by the Midhurst figures, show the best that can be done for patients, and those that do not go there fare much worse, as my critics believe, the prospect for sufferers is gloomy indeed; but if our sanatorium results can be greatly improved by altered methods, as I suggest, and if patients not going there may yet do quite well, the outlook is surely less gloomy.

Methods of Investigation.

I am anxious not to overcall. My inquiry dealt with only one district, with patients drawn from the working classes, sent to sanatoriums for an average period of three and three-quarter months, and treated by modern methods. It referred not to immediate results, but to those observed at the end of two or four years. I have no ground for contradicting those who say that three months is an insufficient period, and that no results can be expected in so short a time, but this is the standard period of sanatorium treatment in this country for working-class patients. Dr. E. E. Prest may be quite right in stating that modified methods give better results. I do know that he is a progressive thinker in these matters and would not hesitate to adopt any improvement which occurred to him, no matter how unconventional it might be. But compared with the reports of various sanatoriums published from time to time, my sanatorium results, without the controls, seem favourable.

Dr. Thompson says, "Dr. Ward writes sarcastically that if patients were kept at the institutions for a year or more we should have our authorities urging for a period of three or five years instead of one." Yet Dr. J. Crocket the following week says exactly this, "Many patients require three years, and not three months." My figures do not disprove this, but if sanatorium treatment is to be used, and it becomes a question of three years' treatment to achieve arrest, it is certain that considerably under 10 per cent. of the class of patient here considered would submit to it, possibly under 1 per cent., quite apart from the enormous expense involved. So we are driven to Dr. Noy Scott's proposition, who "cannot help thinking that if much of the money which has been spent on sanatoriums had been used to enforce by-laws regarding fresh air and sunlight in cottages we should have had better results." I should prefer to utilise modified sanatoriums partly as hospitals and partly as preventoriums. There is a great deal in the suggestion made in THE LANCET editorial of April 16th, "We would venture the prophecy that sanatorium treatment will more and more develop on the lines of prevention in the young, than 'cure' in the adult."

To classify patients according to the intensity of the disease rather than the extent would be desirable; for some time I considered how it might be done, but came to the conclusion that it was not possible in my series, for only observation in hospital could enable such a classification to be made. This does not tell unduly against the sanatorium, as acute and pyrexial cases were not sent there. Moreover, nearly all the published results of sanatorium treatment divide cases, with various modifications, as in my paper, into first, second, or third stages.

Dr. Thompson complains that I have included in the sanatorium series patients who had been there just over a month. But the line had to be drawn somewhere, and after consideration I drew it at a month. Had I drawn the line at a full three months' treatment, no doubt the accusation would have been made that among the controls many were included who had all the educational value of sanatorium treatment, though their stay was comparatively short. Dr. Crocket cites a case in whom the disease became arrested only after three years' sanatorium treatment. Dr. Thompson also cites a case of arrest of advanced disease after three years' treatment. But a single case in this regard is of no value. Most practitioners of experience could cite parallel cases of patients who recovered after years of invalidism, and yet who never went to a sanatorium. The same may be said for all special methods of treating tuberculosis, orthodox and heterodox (although the advocates of these ask, as the sanatorium supporters, for early cases).

To go further afield, I know of one case of extensive pulmonary disease, accompanied by laryngeal tuberculosis, who, after sanatorium treatment for a year or more in different institutions was still quite unfit, and yet, after an interval of another year, recovered, and undertook an important municipal post during the war. The patient attributed his recovery to the abandonment of all medical treatment and the adoption of Christian Science. Then there is the case, much boomed a few years ago, of a girl who became "delicate" at 12, was nine months in a sanatorium at 15, after which she continued an invalid, tubercle bacilli being present in the sputum. From 19 to 22 she was for the most part confined to bed, and then "miraculously" recovered. I know two of the doctors who attended this girl, and who, while not ready to acknowledge the "miracle," admit that she recovered and was able to resume an active life after years of apparently hopeless illness. I have also read a paper published in the 1860's which quoted some remarkable arrests of tuberculosis attributed by the author to the administration of cod-liver oil. I would also like to quote from my original paper, "Undeniably a few cases are definitely and permanently improved by sanatorium treatment, and it is worth considering if this number can be increased by improved methods."

Dr. Thompson asks how it is possible to tell that patients treated at a sanatorium often lose ground so rapidly, that after two years they have fallen below the level they would have reached if they had never been there. This conclusion was reached by comparing cases that seemed clinically similar, some of whom went to a sanatorium and some did not; also by comparing the results where one member of a tuberculous family was sent to a sanatorium and another not. It is not claimed that this is a mathematical proof, but one cannot get much nearer to a proof when dealing with human material. When writing towards the end of the paper "a patient at a sanatorium would stay indefinitely, the longer the better," I referred mainly to the use of sanatoriums as hospitals for isolation purposes, and presumed also that an attempt to improve sanatorium methods would be made.

Major and Minor Tuberculosis.

An editorial article in THE LANCET of April 16th rightly considers that before discussing the subject it is necessary to define what we mean by sanatorium treatment. Perhaps even this should be preceded by defining what we mean by pulmonary tuberculosis.

Dr. Crocket considers that my controls were "a doubtful collection." This may well be true, but so also then were the cases sent by me to a sanatorium. In my cases all were included that might arguably be considered suitable for a sanatorium, and for this reason I added a large number of Stage III. cases to the controls, whom I, personally, would never have sent to a sanatorium. I have always tried to send early cases to a sanatorium, which is what they ask for; this was so even when in practice, before the days of tuberculosis officers. The medical superintendent at our county sanatorium then considered the cases I sent were what he wanted; so much so that although there was the usual pressure on his beds he would ring me up when a vacancy was about to occur, and ask if I had anyone to fill it, adding that he gave me first chance, because I never sent anyone unsuitable.

The last paragraph of Dr. Crocket's letter suggests that he regards as definitely tuberculous only the patients who do not improve with treatment other than at a sanatorium. If this reading is correct it is not far removed from the old conception of "consumption" as a disease which never recovered, and that, if a patient did recover, the diagnosis was wrong, and he had never had consumption. Dr. Thompson also complains that I am suggesting tuberculosis is "a comparatively benign disease," although, later in his letter he paradoxically accuses me of pessimism, because I have observed that patients may get well without going to a sanatorium. There must be some misconception here. Pathological evidence indicates such a very wide prevalence of healed, or partially healed tuberculosis in patients dying from other causes, that the pathologist whose lectures I once attended spoke of tuberculosis as "one of the most curable of all diseases," and a letter which recently appeared in the press from a distinguished bacteriologist suggested, reasonably it seemed, that as the immunity caused by inoculation to tuberculosis was so short-lived the reason of such a large amount of apparently acquired immunity among the population at large was due to the presence of a slightly active lesion. In my paper I pointed out the difficulties arising from the common existence of pathological as opposed to clinical tuberculosis. The use of the words minor and major tuberculosis for these conditions seems more suitable, for it is almost certain that the great majority of patients showing pathological tuberculosis did, at some time or other, when the disease was active, suffer from a few symptoms. They were easily

tired perhaps, or got "run down" or thin, or developed an obstinate "stomach" cough, and at that time it is quite likely there were a few physical signs to be detected, such as dullness at one apex, a few crepitations, and diminished breath sounds. Such cases are met with often enough when examining contacts in the home, and present a serious difficulty in attempting any such comparison as I have made. Most of these get well within a short time (I have known this happen within a month or two even when tubercle bacilli were found in the sputum on the only occasion when any was procurable), but some go on to major tuberculosis, and this is where the preventorium should prove beneficial. Many such I have sent to a sanatorium. A comparison of Stage II. cases alone in each series seemed to me enough to eliminate minor cases. When collecting cases I had no bias beyond a moderate belief in the efficacy of sanatoriums, and did not know whither the inquiry would lead.

In considering tuberculosis to-day one great difficulty is that the majority of those who give thought to the subject have been narcotised by sanatoriums.

Treatment other than at a Sanatorium.

Dr. Crocket suggests that if I am right "the best thing that can be done for tuberculous patients would be to leave them alone." If he will make this read "for many tuberculous patients" it is certainly correct. A number of patients do well if reassured and left alone under the normalising influence of their daily work, with possibly occasional observation by the physician, so that other methods may be tried if progress seems unsatisfactory. Minor tuberculosis in private practice is usually treated in this way, and on the whole successfully, with or without the addition of some medicine which enables the doctor to maintain the observation. When tuberculosis becomes more manifest, and has been definitely mentioned to the patient, "advice only" does not for a moment imply no treatment at all. It is here, indeed, that the skill and individuality of a fadless practitioner can be exercised most efficiently. First, to read between the lines of the patient's history, then to put right what is wrong in his daily life. To substitute, for instance, something restful for a too vigorous recreation, or too many public activities in the patient's spare time; or to modify the despairing desire for a short life and a merry one, which so often arises when a patient, especially a young patient, does not feel as well as he did, and suspects that something serious is the matter. And in many patients the weekly encouragement by their doctor is a most important aid to recovery.

Conclusions.

I still hold the views set forth in the paper read on Jan. 31st last. On the one hand I have received severe criticism from some of those engaged in tuberculosis work, but on the other hand several practitioners of experience have informed me that they agree whole-heartedly with my remarks; and the experienced practitioner is generally able to pass very sound judgments on treatment other than his own. The most hopeful means that I can see of dealing with the tuberculosis problem is by adequate isolation of infective cases. This necessitates hospitals, of which there is a shortage, and the introduction of appropriate legal measures, of which there seems no prospect. The preventorium, especially for children, also seems promising, and by all means let us try to improve and coördinate the present sanatorium methods. A committee of experts to visit sanatoriums with the object of devising better treatment, and of standardising our methods, as advocated by the Association of Medical Superintendents, would be admirable if the members are not chosen solely from medical superintendents; it should include a general practitioner, a surgeon (for sanatorium treatment is often beneficial to surgical cases), and an intelligent layman.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
DELAYED TETANUS TREATED WITH LARGE DOSES OF ANTI-TETANIC SERUM.

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THE following case is of sufficient interest to merit permanent record:—

A. B., 24 years, was admitted on April 28th, 1917, to Hull Royal Infirmary, under my care, with inability to open his mouth. He had been wounded five months before and had sustained a gunshot wound of the face, right arm, and right leg. His right eye had been excised and anti-tetanic serum was stated to have been administered on the same day, and again a few days later. After this he appeared to go on well, and the wounds healed up. On April 24th he found he could not open his mouth properly, and he had attacks of shivering. On the 25th he consulted Dr. Soutter, of Hedon, who diagnosed tetanus and sent him into the Hull Royal Infirmary.

On admission he was able to walk into the ward. There was marked trismus, he being unable to open his mouth more than one-eighth of an inch; back rigid, neck stiff, and any endeavour to sit up brought on a severe spasm of the jaw. No headache, temperature normal, pulse-rate 100; he complained of a cough and some pain over insertion of diaphragm. Slept well; no mental symptoms, tremors, or Kernig's sign, but marked increase of the reflexes. No local pain in the wounds which were healed, but a local increase of reflex excitability in the muscles of the face. No sore-throat or difficulty in swallowing. There was considerable general muscular rigidity.

Treatment.

The patient was put on fluids ad lib. Milk, beef-tea, &c., and treated with intrathecal, intramuscular, and subcutaneous injections of anti-tetanic serum.

The following amounts were given: the numbers represent hundreds of units:—

Date in 1917.	Intrathecal.	Intramuscular.	Subcutaneous.	Date in 1917.	Intrathecal.	Intramuscular.	Subcutaneous.
28/4	30	15	—	9	—	160	—
29	—	15	—	10	—	160	—
30	30	15	—	11	—	80	—
1/5	160	15	—	12	—	80	—
2	—	80	15	13	—	30	—
3	160	160	80	14	—	30	—
4	160	80	—	15	—	80	—
5	—	80	30	16	—	80	—
6	160	80	30				
7	—	80	80	17/5*	—	—	—
8	—	80	—	18	—	30	—

* No serum administered on this day.

Total of units given, 2365 hundreds, or 236,500 units.

The intrathecal injections were in every case given under chloroform, and owing to the patient's weakness after chloroform it was considered advisable when possible to miss a day. Twenty-one injections of ¼ grain of morphia were given during the period for the first few days, two a day being given. On May 5th a serum rash appeared. On the 8th he was able to move himself much more in bed and was able to read; on the 9th he was able to sit up in bed and had fish for dinner, but could not open his jaw very widely. On May 16th he could open the mouth quite well, but not to its full extent. There was no stiffness in the muscles of the face. I saw this patient in robust health a year ago, three years after the attack of tetanus.

Remarks.

This case illustrates the value of large doses of serum in the treatment of tetanus. I should point out that the serum was given intrathecally, after lumbar puncture, an equal quantity of cerebrospinal fluid having been drawn off. This method acts on the nerve cells in a shorter time than the intramuscular injection (it is stated in about 12 hours), the intramuscular injection taking 24 hours

and the subcutaneous a still longer time. Intravenous injection was not given on account of the danger of possible anaphylaxis. Medical Abstracts, Vol. I., p. 116, quoting Richet, Brodin and Saint-Girons, "On the immunising action which chloride of sodium manifests on the determining anaphylactic dose," states that if nine parts of saline 0·8% are mixed with one part of plasma, the anaphylactic reaction does not occur. In the above case there was no sign of anaphylaxis, although a large amount of serum was given by subcutaneous, intramuscular, and intrathecal routes.

It is, I believe, difficult at the present time to obtain the highly concentrated serum suitable for intrathecal injection. In a case of tetanus which came under my care a few months ago, I was unable to obtain the highly concentrated serum; the more dilute is not nearly so efficient for intrathecal injection, as only a small quantity can be injected into the spinal theca.

A CASE OF DIVERTICULITIS WITH METASTATIC SUPPURATION.

BY W. E. FOGGIE, M.D. EDIN.,
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THE following is a record of the clinical history and post-mortem examination of a case of diverticulitis in which the rare sequela of metastatic suppuration was present.

C. C., a woman aged 80, was admitted to hospital on August 20th, 1920, with a left-sided paralysis of 14 days' duration.

Family and Personal History.—Her father died of a "stroke," and her mother of pulmonary tubercle. Her only brother and her only sister died in infancy. She was a nurse for 30 years, mostly with private patients, and latterly she has been a prison wardress. Her home conditions are satisfactory. Erysipelas, chronic bronchitis, and neuritis make up her past ailments.

Present Illness.—She has had threatenings of "shocks" for a year or two and has on several occasions fallen down. Two weeks before admission she fell down and was unable to get up. She did not lose consciousness, but was confused. She was unable to stand, and could not move her left arm or her left leg. She has remained in this condition until her removal to hospital.

Condition.—Patient is a very big, heavy, fat woman. She looks aged and helpless as she lies in bed. Her memory is poor unless she happens to be talking about old times. Her chief complaints have reference to pain in her paralysed left leg and left arm. The pains are situated in back of leg and thigh; in upper limb they are in the arm and pass into the neck. Sensation to light touch appears diminished over left side. Left arm is held rigidly in a flexed position close to the chest; there is slight power of movement in the fingers and at the elbow, and also in the leg, but any movement is attended by severe pain. The tongue on protrusion is deviated to the left. Muscles flaccid in the left lower extremity, but rigid in the upper. No obvious wasting. Examination of reflexes on left side shows knee-jerk difficult to elicit, a Babinski, and absence of an ankle clonus; left abdominal reflex is present; supinator and biceps reflexes are exaggerated. Pulse 72, regular; artery wall thickened. Slight enlargement of heart to left; mitral first sound long; respiratory system appears normal. Tongue coated; bowels constipated. Urine, which has a sp. gr. of 1010, is acid, dull-straw in colour, and contains albumin.

Progress of Case.—Patient showed no sign of improvement after admission. The condition was apparently stationary for the first week, but thereafter it got worse from day to day. The pains increased, a cough developed, the patient became sleepless, and the heart failed. The end came at the beginning of the fourth week with increasing weakness, Cheyne-Stokes breathing, and mild delirium. The temperature remained subnormal throughout. The pulse quickened a little after the first week, but was generally only between 100 and 108. The respirations remained quite quiet until the last day or two of life. After one week incontinence of urine set in and remained during the rest of her life. Constipation continued until a day or two before death. The patient died on Sept. 13th. The clinical diagnosis was cerebral hæmorrhage.

Post-Mortem Report.

The post-mortem report by Prof. L. R. Sutherland was as follows.

The body is markedly obese. The layer of adipose tissue over the abdomen measures fully 1¼ inches in depth. The heart is soft and fatty, showing infiltration of the wall of the right ventricle. The aorta is atheromatous. The left lung shows several considerable abscesses having the character of embolic abscesses surrounded by condensed lung tissue The pleura covering several of these is necrosed. Branches of the pulmonary artery contain slightly adherent thrombus. The spleen, kidneys, and liver present nothing noteworthy. The sigmoid flexure, which has large appendices epiploicæ, is the seat of multiple false diverticula. From one of these seen before disturbing the part a small amount of pus exuded. The mucous membrane of the lower bowel generally is hyperæmic. In the brain there is œdema of the soft membranes. The vessels at the base are atheromatous. On the right side in the region of the external capsule there is an area of evidently purulent softening. This is an ill-defined abscess measuring roughly 1½ inches antero-posteriorly by ¾ inch tranversely. It is regarded as an embolic abscess. These is no evidence of hæmorrhage.

Summary.—Multiple diverticula in large intestine—suppurative diverticulitis. Embolic abscesses in lung (thrombosis in pulmonary artery). Embolic abscess in brain, &c.

Commentary.

The entry of diverticulitis into general recognition as a clinical entity dates from the review of the subject by Telling[1] in 1908, when after an analysis of 105 cases the main lines of its pathology and its clinical manifestations were laid down. The disease received much attention after this more especially from surgeons, so that Lockhart-Mummery, in his treatise on diseases of the colon,[3] is able to give a detailed account of the condition and of its surgical treatment. In 1917 Telling and Gruner,[2] from a study based on 324 cases, were able to amplify and give more definition to their previous picture on both its pathological and clinical sides. Lastly, in 1920, in a discussion at the Royal Academy of Medicine,[4] opinion was focussed from many sides on the whole subject especially as regards its ætiology, diagnosis by X ray, and surgical treatment.

It is now recognised that the condition occurs generally in those at least of middle age, frequently in the obese, and often where there is a history of constipation with the added factor of increased pressure inside the bowel. The main site is the sigmoid flexure. The diverticula, generally multiple, allow the retention of fæcal material which goes on to the formation of concretions. With subsequent bacterial invasion there results a diverticulitis which may lead on to perforation, or to adhesion to neighbouring organs—e.g., to the bladder, or to tumour formation and possible stricture. In short, the diverticulitis in an acute or in a chronic form has to be reckoned with in the diagnosis of the various surgical or gynæcological conditions occurring in the left lower quadrant of the abdomen. The present case is on a somewhat different footing. It happened in a weak old woman, and the diverticulitis had not proceeded so far as to develop those secondary results which bring the disease within the likely range of clinical recognition. It is sometimes possible at this stage of the disease to demonstrate the presence of the diverticula by the use of X ray with bismuth meals.

In his review of 1908 Telling could only find one example of metastatic suppuration, that of Mackie Whyte,[5] who found in a patient ill with rigors and pyrexia, multiple abscesses of the liver, secondary to a diverticulitis in a cavity the size of a thrush's egg in the sigmoid flexure. In p. 494 of his monograph of 1917 Telling still says "so far only one example of this (i.e., metastatic suppuration) has been recorded." I have not been able to find any other case, so that the above appears to be the second recorded one. It is regretted that the abscesses in the lung and the brain were not examined bacteriologically so that their relation to the occult focus in the sigmoid might have been made more explicit.

References.—1. Telling, W. H. M., THE LANCET, 1908, i., pp. 843, 928. 2. Telling, W. H. M., and Gruner, O. C., British Jour. of Surgery, vol. iv., pp. 468–530, 1916–17 (complete bibliography). 3. Lockhart-Mummery, J. P., Diseases of the Colon, 1910. 4. Proc. Roy. Soc. Med., Sect. of Surg. Subsect. of Proctology, vol. xiii., No. 6, pp. 71–98, 1920. 5. Whyte, J. Mackie, Scottish Med. and Surg. Jour., vol. xviii., Feb., 1906.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

THE PRIVATE CLINIC SYSTEM:

AN IMPORTANT DISCUSSION.

AT a general meeting of Fellows of the Royal Society of Medicine held on June 16th the President, Sir JOHN BLAND-SUTTON, in the chair, an important discussion took place on private clinic systems in this country.

THE PROBLEM OF THE PRIVATE CLINIC SYSTEM.

Sir THOMAS HORDER opened the discussion. He said: If I interpret my function aright this evening, Mr. President, it is not to emphasise my own personal views upon the subject of our discussion, by particularising as to the actual form that I think the private clinic should take in order to meet what many believe to be a growing demand, so much as to refer briefly to various aspects of the whole question, and thus test the opinion and collect the views of colleagues working in different branches of medicine.

The actual wording of the subject of discussion has itself been difficult. I shall assume that one of the things we have in mind this evening is a consideration of what is conveniently termed "group diagnosis" and "group treatment," since this idea, as I understand the matter, is the debatable factor in the conception of the modern "private clinic."

Group Diagnosis and Group Therapy.

There is, of course, nothing new in the conception of group medicine.

1. The principle is in daily operation in most of our general hospitals, where each of us has the great advantage of the opinions and special technique of our colleagues in the investigation and treatment of our patients. In these institutions, again, patients are "transferred" frequently from one ward to another, and from one out-patient department to another, so as to secure for them the benefit of the service most nearly adapted to the nature of their diseases. That the principle can operate under the same roof, as it were, and that we can meet in consultation about cases of mutual interest without loss of time either to the patient or to ourselves, are two great assets in our hospital practice the value of which can be scarcely over-estimated.

2. In our private work the principle of group medicine is also being acted upon constantly. We all know where to get reliable expert help in regard to investigations which we judge to be likely to yield important facts supplementary to our own examination of the patient. If the nature of the case is, in the main, outside our province, we pass the patient over to the colleague most likely to help. As for diagnosis, so also for treatment.

But in private practice all this desirable collaboration does *not* go on under the same roof, nor are there means of securing the colleague one wants without much loss of time both to the patient and to his advisers; there are no days and hours which are fixed for attendance at a known place where the expert is available for consultation.

Now it will scarcely be denied that the facilities for group practice afforded by general hospital conditions lead to increased efficiency so far as the patient is concerned, and also contribute more to the advance of medical knowledge. This fact is recognised by the public as well as by the profession. It seems but a natural corollary that some adaptation of the same method to private practice is desirable, and should be seriously considered. It is a question whether such a development is not already overdue. It is also a question whether, if the profession does not itself arrange facilities for group medicine, and itself control the form in which the principle be exploited, the public may not force the doctors' hands by efforts of its own, probably destined to yield less efficient results, and almost certainly many more professional complications. That extraordinary venture in New York, calling itself "The Life Extension Institute," to which many of the best known and most reputable members of our profession in the States and even a few in our own country are acting as medical advisers, is really a reflection upon the persistence of the idea that one man can any longer be considered capable of coping with the whole gamut of medical knowledge as it exists to-day.

Bound up with the principle of group diagnosis and group therapy is the problem of the nursing home. The "patient of moderate means"—a type that has increased greatly since the war—wonders why little or nothing is still being done to improve in radical fashion the present unsatisfactory conditions in this connexion. If the development of group clinics hastens the arrival of large institutions properly equipped and administered, which shall replace the innumerable small converted private houses in which most of our nursing-home patients are at present being treated, it would probably be welcomed for this achievement alone.

Before any clinic system, whether it embody the notion of group medicine or not, can prove itself an advance upon our present methods, I suggest that it must be so planned as to ensure two advantages:—

(1) It must supplement the ordinary routine physical examination of the patient by providing facilities for expert investigations and thus rendering the diagnosis fuller and more accurate.

(2) It must offer facilities for more thorough and therefore more beneficial treatment than can be undertaken by the individual practitioner.

The Aims of a Group System.

Aside from these two advantages a successful group system should aim at two other benefits:—

(3) It should save time for both doctor and patient, but without sacrifice of efficiency.

(4) It should save money for the patient, again without sacrifice of efficiency.

If I may assume that the first two desiderata must be fulfilled, it is clear that certain private groups and clinics now existing, or under consideration, are out of court. I will mention two of these in order to define the subject more nearly:—

(1) A practitioner, working with a number of juniors, who are in effect his assistants, who are paid by him, and who have no special knowledge or training.

(2) A number of practitioners or consultants of equal status and experience, working together, but not chosen so as to be representative of various branches of medicine.

With the first of these we are, of course, familiar. Even supposing that the senior man sees all the patients, which he rarely does, such an arrangement does but multiply his own individual activities, it adds no extra value to them. I am not sure if the second of these groups exists in this country. In U.S.A. there are several such groups, sometimes miscalled "diagnostic clinics."

On the other hand, there are two forms of the private clinic which, on reflection, would appear to operate so as to fulfil the desiderata mentioned.

(1) A number of practitioners or consultants of equal professional status, working together, chosen carefully so as to be representative of various branches of medicine ("hand-picked," as our American cousins term it). This constitutes a true group.

(2) A practitioner or consultant of great experience and balanced judgment who, after taking a careful history and making a thorough routine examination, refers the patient to one or more specialists for expert investigation and report. This does not constitute a true group.

Considerable reflection and some experience lead me to believe that both of these systems are practicable and that both of them should be encouraged. I propose briefly to compare them, and to consider

the difficulties that beset them, as well as the benefits to be expected from them. For convenience I shall term the first the "*group clinic*" and the second the "*personal clinic.*"

The Group Clinic.

The group clinic has certain advantages over the personal clinic. It caters for patients having a much greater variety of diseases because its staff represents several different branches, whereas the personal clinic is likely to attract mainly (or only) those patients whose ailments are known to be of special interest to the chief. Again, the group clinic will naturally have some arrangement by which the constituent members are readily available for the expert examination of any patient—their hours of attendance at the clinic would be known, and it would therefore not be difficult to have all the consultations going on under the same roof, though this is not, of course, essential. The chief of the personal clinic must make his special arrangements with his experts, entailing loss of time and much secretarial work. Meetings of all the members of the group clinic would take place at a settled time, and general discussions about difficult cases would be possible. The chief of a personal clinic would rarely, if ever, meet all his experts together. And again, the group clinic can undoubtedly add more valuable, and more authoritative, knowledge to medical progress than can the smaller institution; its records must necessarily deal with larger numbers and must reflect a wider range of opinion. This is an important consideration.

The Personal Clinic.

On the other hand, the personal clinic has certain advantages. The chief is brought into close touch with each patient, a very valuable factor in practice; in the group, although this is possible for each member and each patient originally sent to him, it would tend to lapse in respect of the patient whose main trouble is found to concern another man more than the man who first sees him. And the personal clinic scores heavily by possessing someone who can act as responsible agent at all of the three critical points in every group system; the point where sound judgment is needed to decide what expert examinations, if any, are desirable to supplement the general survey of the patient; the point where the various expert reports are coördinated or integrated so as to arrive at a full diagnosis; and the point where the programme of treatment is decided upon. It is true that the group clinic might choose one of its number to act as assessor in this manner, but this would almost certainly lead to serious difficulties, and would probably strain the friendly relations of the group not a little.

It seems certain that these three crucial points must be borne in mind and carefully provided for; *upon them depend the main success of any form of group medicine.* I think it is generally agreed that to send a patient the round of a number of experts quite indiscriminately, or to fail in the proper integration of the expert reports, or to be either scrappy on the one hand, or over-elaborate on the other, in formulating the therapeutics indicated by a study of the case, is to bring the whole position of group medicine into disrepute.

Finance.

Then in the very pertinent question of finance, there are obviously much greater difficulties facing the group clinic than the personal clinic. In the group clinic it is hard to see at present how a flat rate fee can be arranged for the patient without considering the members of the group to be, in the legal sense, partners. And if they be partners, is a Member or a Fellow of the College of Physicians eligible to work in such a group? In the case of the personal clinic a flat-rate fee may be charged by the chief to cover his own survey, certain clinico-pathological and other investigations, and his "integration" of expert reports, and the specialists may be paid their customary consultation fees as extras.

Certain Difficulties.

As already suggested, the formation and the operation of the personal clinic are fraught with fewer difficulties than is the case with the group clinic. And yet there are many who think that the group clinic, once the initial obstacles are overcome, and the idea has ceased to seem strange, is destined to do more for patient, doctor, and medical science than the one man clinic can possibly do. Let us look more closely at some of the difficulties facing the group clinic, and also at some of the reasons alleged against the system.

1. *The Preservation of Personal Contact.*—Can the personal contact between doctor and patient, which most of us consider to be so important, be preserved? The answer seems to be that it can, but that there is a definite tendency for it to lapse. This lapse can be prevented, either by the group being no larger than is absolutely necessary to cover the main branches of practice, and by each member of this compact group recognising the importance of himself guarding the personal relationship with all the patients who come originally to him, or by each group having a member detailed for this purpose; this member would rather naturally be the general physician of the group.

2. *The Difficulty of Finance.*—This has to be considered as it affects the patient and as it affects the group. It is perhaps a better scheme to charge a relatively small flat-rate to cover the general survey and preliminary clinico-pathological investigations, and to surcharge for whatever expert examinations are decided upon, than to fix a relatively higher flat-rate to cover examinations by all the experts if these are necessary. In this way the group system escapes the criticism of exploiting the patient by superfluous examinations which increase his expenses unnecessarily. Financial arrangements between the members of the group probably represent the most difficult question of all. Should the distribution be upon equal terms, or based upon the number of patients introduced to the group by each member respectively, or upon the number of hours spent at the work of the clinic? A group clinic doing successful work in the States adopted the somewhat bold and decidedly candid plan of sharing fees in proportion to their incomes on entering the clinic, with an agreement to take equal shares at the end of three years. I hope that some speakers following me may have other concrete suggestions to offer.

3. *Legal Relations between Members.*—The question of finance as it affects the group is bound up with the legal relations existing between its members. Here, again, are matters needing discussion. Is a deed of partnership the best form of relationship between the workers? Or would an incorporated body give them a better basis for good work and amity? Shall they be whole-time or part-time men? It is highly probable that quite successful groups may be established without uniformity in these matters.

4. *Possible Disturbance of Cordial Relations.*—Will the advent of the group clinic tend to disturb those cordial relations between members of the profession which we all strive to preserve? This is, of course, one of those fears which only care on the part of the men in the group can dissipate. There are certain privileges which it will be well to guard in order more surely to avoid the growth of undesirable cliques; the right of any patient to avail himself of the opinion of a specialist outside the group should be unalienable, and it will perhaps be equally important to permit overlapping of groups, assuming that the organisation of the group admits of this.

Conclusion.

There are other points which call for discussion; but I have already said enough by way of intro-

duction. It would seem that the private clinic, supervised by one man, who is fitted by nature, by training, and by experience for such work, has up till now been more easy to set going in this country than the group clinic. And we must remember that Great Britain is not the United States, and British patients are not Americans. All the same, it seems highly probable that the group clinic will soon become a successful British institution, though its constitution and its mode of operation will remain British. Initial experiments will doubtless be looked at very critically, and early efforts will reflect the courage of the men who embark upon the scheme. Group medicine is obviously much better adapted to urban than to rural conditions. Not all men are qualified by temperament to act with others in a group; this fact will be patent to all of us. But given due recognition of this fact, a sense of loyalty within the group, and a desire to make the patients' welfare the paramount consideration in all aspects of the work—given these things, there is probably a much greater future for the group clinic than for the personal clinic. Our present forms of practice are satisfactory up to a point, and they are typical of British individualism. But they often lack cohesion, they are not infrequently extravagant both of time and of money, and it can scarcely be claimed that in the case of many complex, obscure, and chronic disease-processes the patient is getting all the help that present-day medical knowledge and technique can supply. The words of Dr. L. F. Barker, an ardent apostle of group medicine, are not exaggerated, when he says: "No single person can, any longer, hope to attain to equal skill in the use of the many instruments and procedures of diagnosis. And the same may be said of the complexity of modern therapeutic technique. No general practitioner, no surgeon, no physician can any longer, unaided, give to patients the benefits that they can, in the more obscure cases derive, and have a right to expect, from his efforts when combined with the properly coördinated (and subordinated) activities of a group of adequately trained medical and surgical specialists."

TEAM WORK ORGANISATION.

Sir HUMPHRY ROLLESTON said: The expression "Team Work" first became familiar in connexion with research into problems necessitating collaboration between experts in various branches of medicine—for example, the clinician, the physiological chemist, the bacteriologist, and the pathologist. On the advantages of such schemes of work there is no question, and to-night's discussion is directed to the consideration of team work in the diagnosis and treatment of individual patients rather than in the advance of clinical medicine as a whole. As this method constitutes that employed in ordinary well-equipped general hospitals, the issue before us is narrowed down to its adoption in private practice. In other words, to place within the reach of the rest of the population the same complete investigation and varied treatment that the necessitous poor have in the large general hospitals or, more briefly, to provide collective instead of individual medical attendance. This, again, is not a novel notion; firms of medical practitioners often constitute themselves with the view of covering more or less completely the large field of medicine and its special branches. Thus in choosing a junior partner preference is given to a young man with a special surgical bent and experience; and from time to time the various partners take special courses to qualify themselves as local authorities in eye, throat, X ray work, and so forth. But what is comparatively recent is the further development of this idea into the organisation of combined expert medical and surgical diagnosis and treatment such as has been carried to its logical conclusion by the phenomenal success of the brothers W. J. and C. H. Mayo at Rochester, Minnesota. This institution, which slowly grew up under the guidance of exceptional organising ability, has recently by its endowment as the Mayo Foundation become a permanent educational and research body, and so has undergone a further development. In its previous stages it showed the way for a complete surgical clinic on the team work lines, and the example thus set has aroused the sincerest form of flattery. Naturally, the rest of America has not been backward, and the practice of what is called "Group Medicine" has spread widely in the smaller towns. In large centres the paying wards attached to teaching hospitals have long supplied this need; and it is noteworthy that the attending physicians and surgeons in many hospitals in America have their consulting rooms in the hospital, much to the patients', their own, and the hospital's advantage. The method of thorough examination of a patient by experts of all the specialties and the final assembling of the accumulated data by the supervising medical man or general diagnostician, who is the head of the team, or what Sir Thomas Horder called "the personal clinic," has been described in detail by Prof. Lewellys Barker,[1] of the Johns Hopkins Hospital, who has elaborated the system from the physician's standpoint.

As to the personnel and arrangements of a team work organisation, there is room for much variation according to the aims of those concerned in directing it. It might consist in miniature of an up-to-date hospital with beds for observation, laboratories, rooms for X ray and other examinations, and an operating theatre; the staff would consist of a physician or physicians, a surgeon or surgeons with assistants or colleagues with special knowledge in particular departments, bacteriologist and pathologist, radiologist, and so forth, with a resident secretary who should combine these duties with those of resident medical officer. Or this team work might be confined to cases of a medical or surgical character—for example, those of obscure illness requiring metabolic and chemical examination, and patients with nervous or gastro-intestinal disorders.

As to the clientèle of such a unit, the patients might be merely those of members of the team who have united their forces and practices so as to economise time and obtain more satisfactory results; or such a team work organisation might receive patients from outside practitioners for purposes of diagnosis, and return the patients with a report much in the same way as the Clinical Research Association reports on blood and other examinations. In large cities there would be room for both these forms of institutions; the private arrangement would perhaps be better suited for large than for small towns; for in a small town a private team might act injuriously on practitioners not members of the team and tend to freeze them out, thereby damping down healthy competition and engendering cliqueism.

Team work in an organised form is certain to come, if indeed it has not already arrived, but in this discussion its uses and possible abuses should be considered, and these may be briefly referred to under the following heads:—

1. From the patient's point of view, there can be no doubt that a systematic examination by all available methods of the laboratory, X rays, and so forth, will be a great advantage and will economise time. Financially, although the initial outlay may appear considerable, the ultimate gain may compensate; it is perhaps reasonable to believe that with the arrangements concentrated in one establishment the inclusive charge would be less than the amount of the fees now necessitated by examinations made as occasions seems to demand. It might be suggested that, although more extensively analysed, the patient might suffer from a multitude of counsellors, inasmuch as he would be regarded more as a machine out of order than as a human being who is out of health.

[1] Barker, L.: New York Med. Jour., 1918, cviii., 489–493, 577–582.

2. From the point of view of the medical profession it is obvious that by having the facilities of an up-to-date hospital and of expert advice from his fellow team workers, the medical man would get through his work in a much more satisfactory fashion and with a minimum loss of time. Medical men who are not attached to a team, on the other hand, would be left out in the cold unless the team work was so far available to them that they could send their patients there for expert opinion and if necessary treatment; and even then they would to some extent suffer in prestige.

The financial aspects of team work will require careful consideration both as regards the relations of the individual members of the teams and as regards the reputation of the profession as a whole. The question whether an individual shall be, so to speak, a whole or part-time member of a team is a matter of private arrangement, but obviously of considerable importance from the point of view of a consultant in active practice who joins a firm. If he be a whole-time member all the fees that he earns—e.g., for long journeys—would go into the common fund, and this would be justified on the assumption that his reputation may be derived from the team of which he is known to be a member.

From a financial aspect a team of consultants and experts would be in the same position as a firm of general practitioners, and the members of the team might be regarded as shareholders in a company trading in medicine for profit.

POINT OF VIEW OF THE GENERAL PRACTITIONER.

Dr. DRURY PENNINGTON said: I have spent nearly two years trying to discover why there should be any objection to any body of men grouping themselves together for their mutual benefit both financially and scientifically. Individually, men of all branches of medical work will agree readily enough that some scheme is needed whereby their work should be better coördinated with that of others. Collectively, the various medical bodies have seemed curiously shy, and the most concrete objection that I have thus far been able to extract is that "the time is not yet ripe."

In my view the late world-war has ripened a good many fruits, at least it has forced mere flowery speculation into fruitful action in many walks of life. Politicians at the end of 1918 were preaching a new heaven and a new earth! Look around for the fulfilment of this flippant prophecy and you find only one outstanding change from the days before the war. This change is summed up in the word "combination." Banks have grouped themselves into a few huge machines. Trade in all directions is seeking larger and larger combinations in order to exist at all, and by no means least, labour has so grouped itself that at present we are experiencing the worst economic crisis within living memory—an instance perhaps of faulty organisation due to false ideals.

Can we alone as a profession smugly continue to plough our lonely little furrows, and say, "Thank God we are not as these others." If such complacency ever really existed in fact, the last three months in Harley-street must have brought an unpleasant awakening.

Therefore I say with all the emphasis at my command: The time is over-ripe. We need a fresh adjustment to new conditions and for two main reasons:—

(1) The rapidly decreasing power of the public to pay the old dues, and

(2) The formidable increase in the cost of diagnosis during the last 15 years.

These two considerations alone would justify such a meeting as we are holding to-night, but there is yet another aspect, one of even greater importance, and that is the scientific rather than the merely commercial development of our craft.

Now thus far I have doubtless merely paraphrased the opinions of previous speakers this evening, but I am anxious to focus attention more especially on the position and needs of the general practitioner in relation to present-day difficulties.

Speaking as a general practitioner myself I have found the following main problems arising in the course of a fairly varied practice. Time and again I am confronted with the chronic case with a multiplicity of symptoms which in the nature of things probably arise from some fundamental cause or causes, and before I can assure either my patient or myself of the accuracy of my diagnosis, I find it necessary to apply to a bacteriologist or radiologist—often both—to give me some of the missing links in the chain of evidence. This course may be exhaustive and thus scientifically desirable, but what of the patient's pocket? Here we arrive at my second frequently encountered difficulty, often only surmounted by my either going round begging for gratuitous service or, as often, of converting my fee into a payment on account for the patient.

More strictly on the scientific side I am faced with a difficulty of a rather different order. When as a country practitioner I was in the habit of regularly reading medical journals in an endeavour to keep abreast of affairs, I often found a most plausible article dealing with a problem that concerned me at the time. The writer was an entire stranger to me, and despite the usual advertisement of degrees in the superscription, I was wholly unable to estimate the accuracy of a single statement made. The only practical solution lay in the empirical application of the advice to the next likely patient—a wholly unmoral proceeding unless the patient is told that he is being subjected to a clinical experiment, and that if no success attends the effort no charge will be made. I do not think my experience in this respect is in any way unique. I may say it is a common practice among others similarly situated.

Surely it would be of infinitely greater value to all concerned were it known that an article written by John Smith had been submitted to the scrutiny and criticism of several colleagues who had seen the same cases upon which the article had been based. And here let me add from a general practitioner's point of view it is not enough that a number of surgeons should pronounce favourably upon a suggested panacea; we are quite as concerned to know what the psychologists have to say in opposition or agreement on the same subject.

The Practitioner as Assessor.

No one could more appreciate the value of the advice and technique of the specialist than myself, but while I am a convinced advocate of all forms of specialism, it is my concern to get results in the individual rather than in the mass, so that I become very conscious that specialism tends sooner or later to mental myopia and that the whole is apt to be lost in the part. It is therefore not wholly surprising that I find myself more and more being forced out of the position of being the mere hack of consultant autocracy into the far more difficult rôle of arbiter between the oft-times conflicting opinions of rival specialists. I conceive it to be my duty to keep a watchful eye upon the whole individuality of the patient in regard to any advice that may be offered as to any one portion of his anatomy—in short, I find difficulty in adequately discharging the office of assessor to opinions of consultants as they are now given.

You may argue that my difficulty in this respect is of my own making, that it serves me right for arrogating to myself functions for which I was never intended, and that I should have been content with the subordinate rôle of a general practitioner. I submit in reply that the status of the general practitioner has changed very considerably during the last 20 years. He can now actually be trusted to make an accurate diagnosis of an acute appendix or pneumonia! And I venture to add with all deference that while there has been a perceptible rise in the general level of intelligence among the hack workers in medicine, there has been a corresponding falling off of the need for the general consultant physician for the purposes of diagnosis and therefore also of treatment.

And here I may perhaps indulge a human weakness and prophesy that before many years pass the general consultant physician will cease to exist but will find his regeneration in the rôle of an assessor to a team, to his very great content and profit.

What, then, of the general practitioner in this scheme of things? As I see it, the success of any group will largely depend upon the acumen and personality of the assessor. I use the word acumen designedly because it does not exclude the man with experience of men, the man of common-sense and therefore the type not always found among the ranks of academic successes. In less veiled language, a man's diplomas or degrees will cease to be the only criterion. For that matter the public is realising more and more that the man of many degrees is by no means deified by reason of such degrees, and until the time arises when someone invents a system whereby personality and common-sense may be estimated in terms of marks, degrees per se will be less and less the hall-marks of efficiency.

Thus team-work by no means excludes the employment of the general practitioner in the rôle of assessor, for it is certain that unless the general practitioner is up to his work his colleagues will find reason not to collaborate with him.

Conclusion.

To sum up my various points:—

1. The time is ripe for the adaptation of medical practice to the needs of modern science and modern economics.

2. The formation of teams all over the country—each adapted to meet local requirements—should supersede the present system of individualism.

3. Evils which exist here and there in private practice would tend to disappear when the individual has no longer only himself to consider.

4. Any evils which team-work might be thought to engender would be far more easily detected and corrected than is the case now.

Professional Feeling in the Matter of Private Clinics.

Mr. BISHOP HARMAN said that as chairman of the Hospitals Committee of the B.M.A. he felt honoured in being asked to contribute to this discussion, but he wished to make it clear that he had no authoritative information to give. There were certain points, however, that might throw light on professional feeling in the matter of these private clinics. The idea of professional combinations was not new. During the war the Central Medical War Committee urged private practitioners to combine (*a*) to foster subdivision of their work, to promote economy, and to achieve higher attainment in special branches of the profession; (*b*) to facilitate continuity during periods of illness, holidays, and study. The recommendation was well received and had been acted upon with success. A similar combination for in-patient work in a private hospital in the provinces had also been under review and no exception had been taken to the idea. Mr. Harman thought that in general no objection could be made to the principle of combination, either for domiciliary treatment or clinic work. It was the necessary outcome of the growing complexity of medicine, and the logical corollary of the established principle of hospital practice. It was now desired to extend those benefits which patients at a charity obtained as a matter of course, to private patients who were able to pay their way.

In practice certain difficulties might arise. The cost of establishing an efficient private clinic might be so high as to prevent a combine of capable doctors from establishing a clinic on their own resources. They might be tempted to accept lay finance, which might mean lay control or direction; the lay element would desire financial success, and the temptation to some form of advertising would be difficult to combat. Some difficulties akin to this had arisen with regard to establishments, originally founded as quasi-medical institutions, which now combined medical work with facilities for legitimate entertainment. A risk such as this could be guarded against by a proper legal deed of constitution for each clinic before it was set up. Again, if powerful combinations became numerous they might exert an inhibitory influence on the careers of younger members of the profession, who could not or would not seek admission into existing combinations. Existing combinations might become powerful enough to prevent the establishment of new combinations and thereby act detrimentally on the development of professional knowledge and skill. Possibilities such as these foreshadowed a risk of professional competition far more serious than anything now existing between individual practitioners or partnerships, and it was difficult to see how these dangers could be guarded against. Lastly, there was a thought of risk in some minds that the commercial aspect which a costly clinic would introduce might lead to patients being exploited for profit to the combine and not treated primarily for the benefit of the patient. This was a risk present in any form of practice, individual or combined, and there was no safeguard against it other than that of the high standard of integrity of the several members of the profession. So long as that standard was as high as it is to-day the risk was minimal, and there was no reason why we should fail to maintain that standard. In conclusion, Mr. Harman cited some actual expressions of experience made to him by intelligent patients, which showed with what favour these patients viewed such arrangements as were suggested for their benefit.

The Surgeon's Point of View.

Mr. W. H. CLAYTON-GREENE said that as the main subject had been exhaustively dealt with by previous speakers he proposed to touch only on that aspect which affected him as a surgeon. In a discussion on any proposals for change the adequacy or inadequacy of the present system must not escape consideration. To Mr. Clayton-Greene the existing system appeared most unsatisfactory. Before coming to the meeting he had looked up the distance between London and Banff and had ascertained that the distance between London and the only resident establishment where diseases of the alimentary tract could be thoroughly investigated was 587¼ miles! In trying to estimate the advantage of the private clinic system, the surgeon had to consider what help he would be likely to receive from close association with his colleagues (1) in diagnosis; (2) from an operative point of view. Mistakes in diagnosis were made by every surgeon, and radiologists, bacteriologists, and pathologists were at least as fallible when working without clinical evidence, but in Mr. Clayton-Greene's opinion mistakes would be less likely to occur if patients were consulted over by surgeons and physicians jointly with the additional help of the specialists. The system of *sending* the patient to the specialist was wrong, and the habit of sending a piece of the patient still more reprehensible. The dangers of this latter method were exemplified in a case in which Mr. Clayton-Greene had recently been associated. A digital tumour had been sent to a pathological laboratory as ? sarcoma, and since the tumour showed numerous round cells, the suggested diagnosis was confirmed. The true nature of the condition—a granuloma due to syphilis—was elicited in a consultation which, had it taken place earlier, might have saved the patient from the loss of a useful part of his arm. This was the diagnostic aspect of the question. As to the operative side, the work done in most nursing homes contrasted unfavourably with that done in hospitals, which was essentially team-work. Even in the best nursing homes the same standard of efficiency would hardly be reached. Operations in private houses were even more difficult to arrange. For all these reasons private clinics appeared desirable. It had been said that the clinic system was foreign to British ideas, but if this system did its job well the British public would march to the door of the clinic, even if to reach it they had to travel 587¼ miles.

The Business Side.

Mr. W. S. DICKIE said that the problem had to be considered from the point of view of the patient, of the medical practitioner—using the term in its widest sense—and of the credit and reputation of British medicine. With regard to the patient, his interest consisted in getting the best possible treatment, attention, and environment at the lowest reasonable cost. The general public was becoming much more critical than formerly with regard to the accommodation available, and comparisons between British and foreign provision for the treatment of private patients were much to our disadvantage. As to the medical practitioner, it was obviously to his interest to have at his command facilities for examination, diagnosis, and treatment of his private patients at least equal to those existing in well-equipped general hospitals.

If we assumed that existing conditions were unsatisfactory, how were they to be remedied? Provision might be made at existing voluntary institutions for receiving a certain proportion of paying patients, and this plan, on a limited scale, was already in operation in various places. The plan had certain obvious advantages. There was no need for any initial capital expenditure; existing buildings and administrative machinery were utilised, and already installed technical plant—probably not running at full capacity—was available. The disadvantages were that (1) in some, perhaps in many institutions, any such provision would be outside the scope of the original trust foundation and the present constitution; (2) without important structural alterations or extensions any provision made by existing institutions would be insufficient to meet the needs; (3) provision made by a voluntary hospital could hardly be made available for the use of medical men other than the members of the honorary staff of the institution; (4) a bureaucratic and institutional element between the practitioner and his private patient would almost inevitably be introduced; (5) evidence from America and the continent of Europe showed that the combination of paying and non-paying patients in the same institution worked badly.

Another suggestion was that the necessary provision might be made in or additional to existing rate-supported institutions, but in Mr. Dickie's opinion all the arguments against the provision of the desired accommodation in voluntary institutions applied here even more strongly. Again, special provision might be made by local authorities for building and equipping hospitals for private patients, these institutions being available to the general public at rates to be fixed on an economic basis, so that the hospital should not only pay its way but provide a fund for redemption. The professional service might be open to all registered practitioners, fees being a matter of private arrangement between doctor and patient. Mr. Dickie said that though this plan at first sight appeared to provide a reasonable solution of the problem, the ultimate development would be uncertain, and it might lead to rate control not only of the hospital, but also of the financial and other relations between doctor and patient. Mr. Dickie believed the best solution would be reached by private enterprise, working on business lines untrammelled by association with existing charitable or voluntary or other public bodies. The question arose whether the income could be expected to meet current working expenses, pay reasonable interest on invested capital, and provide adequate sums for upkeep and depreciation. As regards capital cost, no institution for the treatment of private patients could be considered satisfactory if it had not been specially designed, built, and equipped for the work in view. The converted building was difficult to work and costly in upkeep. Capital expenditure was commonly expressed in terms of cost per bed (though this was not in all respects a satisfactory basis), and Mr. Dickie had calculated that the cost of a complete private hospital need not exceed £500 per bed, and in some districts could be less. He uttered a strong protest against elaboration and luxury, which were no more necessary in the treatment of the wealthy than of the poor, and gave his grounds for believing that an adequate private clinic could be constructed at about 1*s.* 6*d.* per cubic foot. As to running expenses, Mr. Dickie claimed that the housekeeping costs need not be greater than those of general hospitals. The medical and surgical expenses were also comparable, since the private patient used no more drugs and dressings than the patient in a public institution; surgical instruments, catgut, and gloves, would be provided by the surgeon, and though wages and salaries might be a proportionately larger item in the private institution, Mr. Dickie expressed his confidence that the running costs of an efficient private hospital need not exceed, and ought not to exceed, the comparable expenses of the voluntary hospital, especially as the private hospital had no costly out-patient department. He therefore used the figures of voluntary hospitals as the basis of calculations. Running costs of voluntary hospitals were at the present time about £3 per patient per week, and he estimated that an income of £7 a week per bed would keep a hospital of, say, 50 beds on a sound financial basis. As to the source of the capital required, Mr. Dickie deprecated the old idea that it was improper and unprofessional for a medical man to have a financial interest in the institution to which he sent his patients. Conditions had changed, and nowadays it was the duty of the practitioner—medical, surgical, obstetrical or general—to be financially interested in the establishment to which he sent his patient if he wished to safeguard that patient's interests. The professional man's active interest would be the element which would lift an institution from the level of a dividend-producing factory to that of an actively beneficent social factor.

Mr. Dickie considered that the medical man should be financially interested in such an institution openly and in association with non-medical shareholders. If a score of medical men combined, put down £500 to £1000 each, and then went to their business friends with a scheme there would be no difficulty in raising an equivalent sum from these friends, who would recognise the need for an institution and its prospects of success. Mr. Dickie warned his colleagues that if they did not themselves proceed to the organisation of a private clinic system it would be done for them by cosmopolitan financiers, who would do it well but would be concerned only with the fees they could obtain and the dividends they could draw.

Some Practical Suggestions.

Dr. G. C. ANDERSON said that he was sure that any move on the lines of the private clinic system would be welcomed by the general practitioner. A general practitioner, anxious to have a second opinion upon a particular case, might be doubtful whether the opinion ought to be that of a physician, a surgeon, or a specialist in some other branch. If the case belonged to the poorer class and could be sent to a hospital it would not matter to whom the patient were directed in the first instance. If, however, the patient could afford to pay, the general practitioner might direct the patient to a surgeon, only to be told that the case was purely a medical one or that an X ray was required before a surgical opinion could be expressed. From a private clinic he could obtain a comprehensive report, most probably accompanied by a clinical diagnosis confirmed by X rays and bacteriological examinations. From the point of view of the public, also, the advantages were apparent. Modern diagnosis was now growing so formidable that very often patients had not sufficient means left for treatment after an accurate diagnosis had been established. The fees charged at a private clinic could be made more moderate than the present fees charged by individual consultants, because by combination the expenses would be materially decreased, and in this way also the receipts of the medical men associated with the clinic would tend to be increased. The general practitioner would be able to attend with his patient, and in this way he would tend to become more proficient in his own work.

There were several ways in which a private clinic might be worked. The team should consist of a number of practitioners or consultants of equal status, chosen in such a way as to represent all the different branches of medicine, with the possible addition of a medical assessor. A possible scheme of work might be that each member of the team would carry on all his own private work at the clinic. The second opinion available in an adjacent room would be an obvious advantage, both to the practitioner and to the patient. Entire freedom of choice could be left to the patient, by providing that if desired he might equally well consult for a second opinion a doctor who did not form part of the team. Each member of the team would draw his own fees from private patients seen at the clinic, but fees from patients sent by outside practitioners to the clinic for general diagnosis only would go into a central pool, upon which would fall the burden of the upkeep of the establishment. The expenses necessary for the conduct of the clinic would be met out of the central fund, the practitioners being thereby enabled to carry on their private practice without any expense at all, and any surplus from the pool could be divided annually. The team of practitioners would not get individual payment for general diagnostic work, but would gain indirectly owing to the diminution of their private expenses. The general practitioner who sent up the case for diagnosis would receive a comprehensive report, and would be free to adopt any line of treatment within his own competence that seemed best.

Arrangements for treatment at such a clinic might be provided, but the privilege of a patient to choose his own specialist should be preserved. The charges of a nursing home attached to the clinic would go towards the upkeep of the home, whilst professional fees would be paid direct to the surgeon or physician who had undertaken the treatment. All patients, other than those who wished to see a particular member of the team, would in the first instance be directed to a medical assessor, who should be a practitioner or consultant of great experience, who would make a thorough routine examination before referring the patient to any specialist. A pooling system for fees could only be made applicable to diagnostic work, fees for treatment being arranged privately between the practitioner concerned and the patient. Dr. Anderson did not think it would be in the interests of either the patients or of those practitioners if diagnostic work alone were done at the clinic. Observation wards would anyhow be necessary, and additional beds for treatment would probably follow as a matter of course. However, arrangements for treatment would lead to greater difficulties in connexion with finance. The expenses of establishing a diagnostic clinic could be provided by the team of medical men, but it was doubtful whether sufficient money would be forthcoming from this source for a nursing home as well. Once outside financial help was contemplated difficulties arise. From his experience as an official of the British Medical Association, Dr. Anderson realised that once the public was asked to aid in any way the financing of a nursing home the question of advertising would sooner or later be raised, and it was for this reason that he felt strongly that the control of private clinics, whether for diagnostic or treatment purposes, should be entirely in the hands of the medical profession.

Financial Benefit to the Patient.

Dr. A. F. HURST said that he had long felt that his work at Guy's Hospital was more thorough than his private work, and so, within the last few months, he had started a private clinic about 20 miles from London. Already he had found it infinitely more pleasant and satisfactory to work in private with a team. In his opinion the financial aspect of such a clinic ought to be entirely independent of the medical officers, who should, however, have control, and should not allow advertising. His own clinic was entirely removed from the idea of financial gain. It was financed by two members of the lay public. The services of an old regular R.A.M.C. quartermaster had been secured to do the administrative side of the work. From the patient's point of view there was a distinct gain, since the total fees he often had to pay to one specialist after another would be much bigger than the fee payable to the clinic. This fee was the same, however many investigations were done, save where the patient's means suggested some reduction. In private practice it was often doubtful whether an additional test would throw light on the condition, and the patient's means had to be considered; at a clinic this question did not arise, an exhaustive investigation was made as a matter of routine, and unexpected diagnoses not infrequently ensued. As to patients of moderate means, in Dr. Hurst's opinion these should benefit at the expense of those better off, and therefore some cases were admitted to his clinic at greatly reduced fees. The clinic should be regarded as a place where a prolonged consultation takes place. The saving of time to the medical officers was enormous, and, from the patient's point of view, though diagnosis might take a week, it was then probably as definite as it ever could be. A resident medical officer was an enormous help in relieving the senior men of routine work, and also in getting the initial history typed ready for his visit. Dr. Hurst gave a few examples of difficult cases which had recently been diagnosed at his clinic. The resident medical officer was in a position to examine a patient at any time of day or night when an attack of pain or other symptom manifested itself, and this fact alone was of incalculable diagnostic advantage. As to treatment, Dr. Hurst mentioned gastric cases as exemplifying the advantages of a consultation between surgeon and physician. In his experience twice as many patients presented themselves suffering from after-effects of gastro-enterostomy as from primary gastric symptoms. He did not suggest that this was not a good operation, but most people would agree that it is done too often, and with adequate medical treatment the patients would often recover without such drastic measures being resorted to.

On the motion of Dr. A. LAPTHORN SMITH, seconded by Sir THOMAS HORDER, the discussion was adjourned to a day which will be announced later.

New Inventions.

ALL-GLASS INHALER.

THE inhaler shown in the illustration is so constructed that on nasal or oral inspiration air is drawn into the main body of the bottle-like apparatus through a small opening in the "neck," passes down the central tube, bubbles through the inhalant, and becomes saturated. The medicated air then, through a by-pass, enters into the upper chamber or nozzle, and thence through the nose or mouth. The apparatus gives a highly saturated vapour with volatile drugs. It has been found beneficial in phthisis, laryngeal tuberculosis, nasal catarrh, and as a preventive of influenza; in rhinitis and suppuration of accessory sinuses—antrum or frontal—various forms of naso-pharyngeal catarrh, asthma, and bronchial trouble. The inhaler can be sterilised by boiling, and by a quarter turn of the stopper it can be safely sealed and packed for travelling with inhalant in it, ready for instant use. It can be obtained for nasal or oral inhalation or the nasal appliance can be used for either. Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W., are the makers.

Inverness. R. C. MACDONALD, M.D. Aberd.

Reviews and Notices of Books.

ANNALS OF THE MIDDLESEX HOSPITAL AT CLACTON-ON-SEA DURING THE GREAT WAR, 1914-1919.

By COMYNS BERKELEY and VICTOR BONNEY. London: W. J. Clark and Co. 1921. Pp. 128. 10*s*. 6*d*.

THE branch of the Middlesex Hospital at Clacton-on-Sea was offered to the War Office on the outbreak of war as a complete surgical unit for 115 men and 15 officers. The offer was accepted and the hospital was employed as a First Clearing Hospital throughout the war. Owing to the fact that all the other members of the surgical staff were already employed on war work, the two gynæcological surgeons, Mr. Comyns Berkeley and Mr. Victor Bonney, volunteered to do the work at Clacton as resident surgeons, each living there and carrying out the whole work of the hospital for part of the week. The book before us gives a readable and interesting account of the work at Clacton. During the 4½ years, 9242 patients passed through the wards and were thus under the care of the two surgeons, who were personally responsible for all the medical and surgical work of the hospital except that some assistance was given in the matter of anæsthetics. The analysis of the cases given in Chapter IV. shows how varied they were and gives some idea of the labour involved. No less than 874 operations were performed, and all the X ray examinations were carried out by the two surgeons themselves, after a little coaching from the late Mr. Cecil Lyster. It is impossible to withhold a tribute of admiration for the patience, resource, and versatility shown by Mr. Berkeley and Mr. Bonney in the work here recorded. Many hospitals with an equal or smaller number of beds had a large staff to carry out the work, which was here done with high efficiency by two men. They have the satisfaction of knowing that the personal sacrifices they made in a time of national need set free other men for work abroad. The proceeds of the sale of the book are to be devoted to the funds of the hospital. The book is well written and contains humorous details of life in a war hospital. It is illustrated by photographs and a few sketches and caricatures, and we feel sure that it will appeal to a wide circle of readers.

DICTIONARY OF APPLIED CHEMISTRY.

Vol. I. By Sir EDWARD THORPE, C.B., LL.D., F.R.S. London: Longmans, Green and Co. 1921. Pp. 752. 60*s*.

IT is rightly pointed out in the preface to this volume that the war has exercised a great influence on applied chemistry, for it has led to an enormous expansion, more or less permanent, of certain branches both in this country and abroad. As there now appears to be some likelihood of a really stable chemical industry being established in Great Britain, the appearance of a revised and enlarged edition of this well-known work is opportune. The chemical manufacturer who proposes to make high-grade products, involving large capital outlay and technical skill, naturally hopes to sell his goods at a reasonable profit. In many, if not in most cases he cannot do so at the present time and, if the industry is to be kept going, some assistance, such as has been outlined by the Government, is an absolute necessity. The interdependence of chemical warfare and chemical industry is so well known that it would appear that Government aid to the industry is at least prudent from a national insurance standpoint.

The arrangement of the work is alphabetical. Vol. I. starts at A and ends with Calcium. Special articles are contributed by experts whose professional standing shows that Sir Edward Thorpe has done his best to make the Dictionary a true record of the present relations of chemistry to the arts and sciences The medical man will find much which is interesting in this volume. Professor Barger writes on alkaloids, aconitine, adrenaline, and alocs, Professor Halliburton on bile, blood, and bone, and Dr. H. Robinson on anæsthetics. There appears to be little room for constructive criticism in the compilation and mistakes and misprints are rare. References to the literature are numerous, but some contributors adopt the rather irritating fashion of quoting the number of the volume and page but not the year; in the forthcoming volumes the year of the references should be added.

ANATOMY.

Anatomy of the Nervous System. By STEPHEN W. RANSON. London and Philadelphia: W. B. Saunders Company. 1921. Pp. 395. 32*s*. 6*d*.

Professor Ranson has produced a work intended for the use of the student of medicine, and has written with this object ever in mind. He begins with a short but clear exposition of the nervous system in invertebrates and lower vertebrates, and thus leads on to the study of the mammalian and human system. The descriptions of the various parts which make up the whole complicated system are good and excellently clear, but we confess to being left with an indefinite feeling of confusion, which is probably connected with the arrangement of the descriptions. The illustrations are instructive, but we would recommend more careful editing of the figures in future editions: for example, the trochlear nerve is wrongly labelled in Fig. 8, and a similar fault appears to affect the mesencephalon in Fig. 11. Such inaccuracies are the more regrettable as the author makes such good use of his figures in his text. The book contains also a short outline of a laboratory course for students of neurology, and ends with a full and excellent bibliography.

Manual of Surgical Anatomy. Third edition. By C. R. WHITTAKER. Edinburgh: E. and S. Livingstone. 1921. Pp. 429. 15*s*.

THIS third edition of a book which has a considerable vogue among students shows some enlargement and several new figures. Mr. Whittaker purports only to give outlines of the subject, and his book is a good example of a student's handbook of its kind. The diagrams serve their purpose, and we especially note one or two of the skiagrams as unusually good. Fig. 46, however, would perhaps give a more natural colour to the retina with better registering, and there is an evident gap in Fig. 2, which ought to contain lines indicating the contributory fibres to the outer cord. The text is readable and clear, but we think it would be as well to omit developmental descriptions where no direct reference is made to their bearing on pathological or clinical problems. We are glad to see that this is one of the few English books wherein Professor Marie's objections to the conventional teaching of the schools regarding aphasia receives mention, although no further details are given. A short appendix, giving Macewen's results in study of bone formation, epiphyseal junctions, and pelvic measurements, closes a good little manual.

ELECTRICAL METHODS IN UROLOGY.

Notions Pratiques d'Électrotherapie Appliquée à l'Urologie. Second edition. By Dr. DENIS COURTADE. With a Preface by Prof. LEGUEU. Paris: E. Le Francois. 1921. Pp. 244. Fr. 18.

As it title implies, this book deals with the uses of electrical methods for the treatment of diseases of the urinary tract. In addition, the physiology and pathology of the tract are described in so far as they are relevant, and also the properties and means of production of the various currents used for treatment. The subject is presented in the form of a series of lessons. The first four of these are devoted to physics and electro-technics and the remaining six to those diseases of the urinary tract which can be successfully treated by electrical methods These diseases are

divided into two classes, of which one includes disorders of function, unattended by organic change, and the other those in which organic changes are present. In the fifth lesson the connexions of the urinary tract with the nervous system are described, and then the various neuralgias—renal, vesical, urethral, prostatic, and testicular—with their symptoms, diagnosis, and appropriate electrical treatment. In the sixth and seventh lessons functional disorders of the urethral and vesical muscle, such as paralysis and spasm, are considered, also nocturnal incontinence, spermatorrhœa, and a condition termed "pollakiurie" (frequency of micturition without increase of the total daily quantity). The remaining three lessons deal with diseases of the urinary tract accompanied by organic changes. These include inflammation and new growths of the bladder and prostate, urethritis, stricture, and polypi of the urethra. The author speaks of the value of ionisatlon, and 13 pages are occupied by a description of this method and its advantages. By means of ionisation drugs can be made to penetrate the mucosa of the bladder and urethra, while the epithelium of these passages is impenetrable by the process of simple diffusion. The treatment of strictures by electrolysis is described, and the method termed "electrolytic dilatation" (a combination of simple dilatation and electrolysis) is recommended by Dr. Courtade, who claims that it acts more quickly than simple dilatation, and that the benefits are permanent. If the stricture is composed of very dense scar-tissue, the method is slow, but good results are finally obtained.

The book is a clear exposition of the powers of electricity for the treatment of diseases of the urinary tract, and is based on the experience gained by Dr. Courtade at the Hôpital Necker during the past 30 years. He insists on the importance of knowledge of physiology and pathology for successful treatment, as well as familiarity with physics and electrotechnics. The first 99 pages contain an account of these subjects that can be clearly understood by anyone who is acquainted with the commonest electrical terms.

The English reader is left in some doubt regarding the method of action of high-frequency currents—other than by the production of heat, and elsewhere when more than one method of treatment is described, the reader is not always given sufficient indication of their relative values. The book is attractively written and is a valuable addition to the literature of medical electrology.

SIDELIGHTS ON THE EVOLUTION OF MAN.

By KARL PEARSON, F.R.S. University of London Eugenics Lecture Series, XIII. Cambridge University Press. 1921. Pp. 27 + 7 plates. 3*s*.

THE intention of this lecture is to set forth what evidence can be adduced from the study of a single bone—the femur—to support the contention that the line of man's evolution followed that of the fiercer of the Primate series, rather than that of the arboreal or more timorous group; that he is more nearly related to ancestors which produced the modern anthropoid apes than to those from which the gibbons have arisen. The point on the evolutionary tree from which the gibbons started, and certain alleged resemblances between Trinil femur and those of Dryopithecus, a fossil gibbon of great size, have for years been in dispute. Professor Karl Pearson is in agreement with Sir Arthur Keith in believing that the modern anthropoids—the chimpanzee, orang, and gorilla—left the direct simio-human stem at a more recent date than the gibbons. He regards the features of the Trinil femur as substantially those of modern man, and dismisses Dubois's view that the convexity of the popliteal space is evidence of near relationship to the gibbons, by showing that the same condition is not uncommon in modern human femora.

The author discusses in particular certain anomalies or deviations from the accepted anatomical description of this bone, the lateral protrusion, the degree of bowing, the hypotrochanteric fossa, "pilasters," and the third trochanter. He gives statistics and measurements of these features which strongly support his contention, although those relating to the third trochanter are not convincing. The significance of pilasters—occurring chiefly in bones showing excessive bowing—seems to be questionable. Professor Pearson says, "I doubt very much whether man ever stood upright until he had developed a pilaster," and the same might be said of the possessors of the rickety bones with which all are familiar. The causation of the pilaster in both cases must lie in the nature of the muscular pull in a curved bone.

So far as the femur alone is concerned the case is a strong one, and the use made of the numerous indices deserves further study. When applied to a single bone in this manner physical anthropology recalls the methods employed by Mr. Sherlock Holmes, in a case in which his client had left his hat behind him, to deduce the type of man he was.

PERSPECTIVE: THE OLD AND THE NEW METHOD.

By A. S. PERCIVAL. London: Longmans, Green and Co. 1921. Pp. 42. 4*s*. 6*d*.

Mr. Percival, well known for his work as ophthalmologist and mathematician, has essayed the difficult task of writing a book on perspective that shall be both brief and lucid. The medical interest of the book is slight, and Mr. Percival has not thought it necessary to include the preliminary remarks on optics which, in other treatises, have mystified many art students. He comes straight to his subject and he sets out the rules of perspective dogmatically and comprehensively. What teachers at drawing classes, as well as their pupils, may thank the author in particular for is the opening section in which the field of view is explained. It is quite usual in books on perspective of far greater ambition than this treatise for the authors to make such muddling remarks on "distance," "station," "point of view," and "vanishing points," that the whole subject of artistic perspective, which requires a clear mind for its understanding, becomes involved in mystery from the start. So much information has never before been given in so small a compass, but knowledge packed closely by an author has always to be unpacked slowly by a reader. An art student to benefit by this small book must read slowly, pencil in hand, and be resolved not to read one line ahead of perfect understanding.

There are several misprints, which should be corrected in any future issues.

JOURNALS.

IN the *Military Surgeon* for May, Colonel A. N. Stark, who was medical officer at headquarters of the American Army in the St. Mihiel and Argonne operations ("Army Surgeon"), discusses the preparation by the surgeon of an army for the medical service of a battle. He stresses the need for full information of what is intended, observing that it is only relatively inexpert staffs which fail to give the senior medical officer information as soon as a movement is decided upon. The same thought is, by apt coincidence, expressed in the May *R.A.M.C. Journal*, where Major A. C. Osburn mentions it was only "after 1916, when brigade staffs became more inexperienced," that he had to find out for himself what his field ambulance was wanted to do. Colonel Stark goes on to say that after the chief surgeon has prepared the perfect battle scheme and has arranged therein for everything that can be foreseen, emergencies will still arise that can only be met by what he terms "esprit," developed in a spirit of mutual confidence and in friendly rivalry.—Major A. Parker Hichens, of the U.S. Army Medical School at Washington, speaking of anaphylactic collapse, recommends small doses of epinephrin and of atropin, though his 1100 gr. of atropin sulphate seems rather a large dose, 0·5 mgm. being the suggested metric alternative. He also recommends epinephrin for the urticaria which may arise after serum injections.

THE LANCET.

LONDON: SATURDAY, JUNE 25, 1921.

Notification of Measles.

MEASLES is a potent cause of preventable infant mortality. Usually the annual deaths from this disease are, roughly, equal to the total deaths from all other notifiable infectious diseases. Two articles in the present issue of THE LANCET, by responsible public health officers, discuss some aspects of the compulsory notification of measles, Dr. R. DUDFIELD, representing an essentially urban community and Dr. R. M. F. PICKEN, a suburban and rural area. In the light of these articles it may be well in the first instance to review the history of notification. Up to Jan. 1st, 1916, measles was compulsorily notifiable in the areas of a few sanitary authorities only who had obtained the permission of the Local Government Board to add it to the list of diseases notifiable under the Act of 1889. During the war serious outbreaks of the disease occurred among troops, which, as noted by Dr. PICKEN in the case of the Highland Regiment at Bedford, were sometimes accompanied by a very heavy mortality. It was therefore important that troops should not be billeted upon or located near, a population among which measles existed. An Order was therefore made by the Local Government Board requiring compulsory notification of the disease all over England and Wales from Jan. 1st, 1916. At the same time an attempt was made to induce sanitary authorities to take steps to reduce mortality from this disease among the civilian population by the provision of home visiting and nursing, and by medical assistance for cases of measles. Grants were promised to assist expenditure for this purpose. In 1918 an account of the administrative measures taken against measles by Dr. S. W. WHEATON, and a report on the prevention of mortality and disablement due to measles and pneumonia by Dr. A. S. MACNALTY, were published by the Local Government Board.[1] In the four years 1916 to 1919, 1,565,380 cases of measles had been notified, and 29,567 deaths had occurred from measles. On the termination of the war the position had to be reviewed. It was found that the country as a whole was not ready for action for the prevention of mortality from measles; and the Ministry of Health, which had succeeded the Local Government Board, decided that the continuance of the Order was not the best method of dealing with the problem. Accordingly the Order was rescinded, and from Dec. 31st, 1919, measles was no longer compulsorily notifiable throughout England and Wales.

The reasons that influenced the Ministry in taking this course are set out in the report of the Chief Medical Officer for the year 1919–20, p. 50. It is there stated that (1) notification of the first case in a house attended by a medical practitioner, and of each case in a household by the parents of the patient, is not an essential factor in a practical scheme for reducing mortality from measles; (2) that the sanitary authorities most active in this work have still to rely in large measure on other means than notification for finding out cases of the disease—e.g., through reports of health visitors and from schools, with the result that notification was redundant; (3) that on the other hand, in certain districts nothing followed notification, and it was difficult to justify the expenditure on notification fees. Grants in aid of measles prevention work were continued. The Ministry were willing, in any case where the sanitary authority had made suitable arrangements for reducing the mortality from measles, to make an Order on the lines of the rescinded Order of 1915 to apply to their district. This course was followed at Paddington, as related by Dr. DUDFIELD, where compulsory notification has been continued up to the present time without a break. The absence of compulsory notification need not prevent any sanitary authority from taking action for reducing the mortality from measles. All other available machinery must be called upon for reporting cases of the disease in children, such as inquiries by health visitors and school nurses in the course of their ordinary duties, the reporting of cases by school teachers, school attendance officers, and by parents. Measures should be devised for speeding up this information, so that it may reach the medical officer of health promptly, and the delay in receipt of the information, referred to by Dr. DUDFIELD, must be removed, that nursing assistance can come into operation sufficiently early in the course of the disease. It is noteworthy that the Registrar-General states the mortality from measles for the year 1919, the fourth year of general compulsory notification, to be 326 per million, which is by far the lowest ever recorded. It is to be hoped that all medical officers of health will give details of measures taken for preventing mortality from measles in their annual reports, and for securing notification without compulsion.

[1] Reports by the Local Government Board on Public Health and Medical Subjects. (New Series, No. 115.)

Antimalarial Measures in India.

ALL who read on page 1393 of this issue of THE LANCET our review of the Report of the Sanitary Commissioner with the Government of India for 1918, the most recent Report yet issued, will feel that the well worn tag—"If preventable, why not prevented," has a special application to the incidence of many diseases, and in particular of malaria, in the Empire. In 1918 the death-rate from all causes in the general population of India was no less than 62·42 per mille. Much of the excess over the average rates in previous years was due to a huge influenza epidemic, and it must be admitted that preventive medicine was as powerless elsewhere as in India to deal with the scourge. No less than 11,134,441 deaths were registered as due to "fevers," against a decennial mean of 4,308,356. But in each 4½ million deaths registered under this term in India, it has long been officially conceded that not less than one million are due to malaria, and that the cases of sickness from this cause which do not end fatally amount to one hundred millions per annum. Were malaria contracted solely by the families of the labouring classes, and without taking into account capital vested in the producer, such figures would imply annually an unproductive expenditure of from £17,000,000 to £20,000,000, by reason of loss of wages, expenditure during sickness, and concomitant circumstances. The calculation, though a rough one, enables us to see how much money and how many lives are wasted and to what an extent industrial production is handicapped, because the preventable disease of malaria is not prevented. The carrying out of measures must fall to local governments, but the responsibility for legislation

rests with the Government of India, whose rarely-exercised right of suggesting sanitary measures has been abrogated; and it is to the Government of India that the medical profession looks for active remedy. The principles which have guided the Government hitherto, in respect of the incidence of malaria, account for the lack of success in making a reduction of the disease in any area sufficiently large to appreciably diminish the loss of lives. As man after man has succeeded to office in the Government, he has inherited files from his predecessor which have taught that, in dealing with a tropical people, possessed of, or obsessed by, caste and religious prejudices, to go slowly is the only sound procedure. It would be well that some more active policy were adopted, although, broadly speaking, when dealing with 450 millions of people we cannot go faster than they want. It is first needful to create the demand for better things.

At the instance of the Royal Commission on the Sanitary State of the Army in India, which issued its Report nearly 60 years ago, namely, in 1863, there was established in each Presidency a Sanitary Commission in direct communication with the local government concerned—that of Bengal being also the advising body of the Government of India. During the short period these Commissions were allowed to exist, they gave an earnest of excellent work. But they were too far in advance of medical knowledge, and slowly but surely their functions were whittled away; first the members, then the president, and lastly the secretary, were got rid of. A single Sanitary Commissioner with the rank and pay of a Deputy Surgeon-General, corresponding to the rank of Colonel at the present day, then represented what had been a powerful body, supported by the Secretary of State, with which the Government of India had to reckon. But even this solitary officer was found to be an awkward factor if he ignored the time-honoured habits of procrastination or inertia in sanitary affairs, so reduction in pay and rank followed. In 1864-65 the Sanitary Commission of Bengal urged the appointment of municipal and sanitary services in all districts. Later the Secretary of State required the attention of the Government of India to the same subject for India generally. Successive Sanitary Commissioners of the other Provinces have urged similar reforms. But 1921 finds necessary action far from complete. Nor has the Government of India exhibited any more virile attitude in respect to measures more directly connected with malaria. Ross commenced his efforts to solve the malaria carrier problem in May, 1895. In December, 1896, the Government of Madras, recognising the importance of this research, urged the Government of India to place him on "special duty," so that full time might be at his disposal. This meant the grant of an acting allowance for the medical officer of a regiment to supply the vacancy, and a small percentage on the normal pay of the incumbent of the appointment. The Government of India, however, pleaded financial inability to meet the expenditure till February, 1898, and we seem to have heard that Ross personally received no thanks or recognition of any description for the work he had done in this connexion. The heritage of files in the offices of the Government of India still dictates that it is cheaper to place quinine on sale than to inaugurate with a whole heart large antimalarial measures in fever-stricken areas. The Government of India would seem still to regard drainage as of dubious utility, yet, and without the knowledge that we now possess of the causation of malaria, the members of the Royal Commission were able in 1863 to give the following definite opinion:—"One of the earliest discoveries of these facts was that intermittent fevers disappeared from places which were formerly ravaged after drainage of the soil and improved cultivation." In 1921 the effect of drainage is a matter of experiment in India with the aid of the Research Fund. Are conditions as to soil and water so very different to those found in other countries as to demand a waiting policy? It may be admitted that agricultural drainage may often be a better antimalarial measure than a mere ad hoc scheme. The prosperous and well-fed native becomes remarkably tolerant of the malarial virus. The problem, too, is different in every Presidency and often in every district. In Lower Bengal, where certain land is slowly rising above flood level, it is a geological-agricultural problem; in the cities the wells and water cisterns are to blame; in the Terai it is usually clear streams that drain the country perfectly; in some places it is railway borrowpits; in others dense jungle; in others again salt pools along the edge of the sea.

In view of all this it is satisfactory to find from the Sanitary Commissioner's last Report that at Secunderabad, as a result of abolition of wet cultivation and drainage of a tank, *commenced in 1917*, a decrease in malaria prevalence has occurred. This is the result of advice which has been offered by successive medical officers concerned since and probably before 1882, but with no result. And retrospect takes us back much further than 1882. Advice was tendered by a Special Committee on which DEMPSTER, of spleen fame, sat in 1845 in respect to Peshawar which was, and is, exactly to the point, but it remains, if not lost sight of, still "under consideration." This advice was as follows: "According to almost universal experience, there is no more ready way of generating malaria in such a climate as this than by profusely irrigating a stiff retentive soil, and therefore we believe it imperative not only to prohibit all canal irrigation within one mile of the Cantonment Pillars, but to take steps for securing the perfect drainage of the space included within this line." That important sanitary works have been completed in India none would wish to deny, but the fact remains that, notably in sanitary organisation and in major antimalaria efforts, the Government of India has failed to adapt its policy with changing times. Of this fact the annual recurrence of one million deaths from the preventable disease of malaria is evidence in the light of recent knowledge.

Hæmoglobin.

INTERESTING letters in *Nature* from Sir RAY LANKESTER have raised again some curious questions with regard to the occurrence of hæmoglobin in the animal series. For the original statements he was himself mostly responsible, nearly 50 years ago, and not much has been added since to the facts which he gave in the Proceedings of the Royal Society in 1872. All vertebrates have acquired the trick of having a rapidly moving circulating fluid carrying large quantities of hæmoglobin which is packed inside special corpuscles. It may be presumed that this method of arranging the supply of oxygen has been developed in adaptation to the increasing complexities of a delicate nervous system, and, in warm-

blooded animals, to the immense rise in the activities of the tissues generally. The plan used by insects, which alone among invertebrates show a rate of metabolism comparable to that of mammals, of a system of air-tubes conveying air, as such, directly to the tissues, has not been pursued further in evolution.

Scattered about among invertebrates there are a number of instances of the occurrence of hæmoglobin, either inside cells or free in the body fluids. There are considerable quantities of it in such familiar objects as the blood of the larva of the fly *Chironomus* and the flat pond snail *Planorbis*, in the muscles about the tongue in the pointed pond snail *Limnæa*, in the nervous system of the sea-mouse *Aphrodite*, in the blood of earth-worms, and so forth. It seems to have developed in a haphazard way in species or genera in a variety of groups, and it is difficult to indicate precisely its utility. It is certainly not necessary for life, since the whole of it may be put out of action by carbon monoxide without any immediate ill-effects. The various species of *Planorbis* and *Limnæa* live together in the same ponds and rivers; both normally obtain their oxygen by coming to the surface and gulping in air; yet in the former hæmoglobin occurs in large quantities in the blood, while in the latter there is merely a trace in its masticatory muscles. It has been shown that the hæmoglobin of *Planorbis* is of advantage when the oxygen supply is very deficient, but the animal must seldom find itself in such situations, and its near relations and neighbours get on quite well without. Such advantage as hæmoglobin must carry with it would seem to be a very small one. Of the remote origin of hæmoglobin we have no information beyond a chemical relationship to chlorophyll and the pigments of red and blue-green algæ. The blue copper-containing proteid found in the blood of the larger mollusca and crustacea indicates another line of development but not a promising one, for the oxygen-carrying powers of this hæmocyanin are small compared to those of hæmoglobin. The odd cases where invertebrates are known to accumulate lead, zinc, and manganese are also perhaps worth consideration. The chemical intermediates which evolution theory postulates are as unknown as their morphological analogues: perhaps because they are colourless and have not been looked for very thoroughly.

For there is no doubt that "hæmoglobin" connotes to everyone its gorgeous colour: whole arterial blood is decorative enough, and when it is laked it is magnificent. As RICHARD OWEN remarks in one of his profounder moments, "Man is naked, and is the only terrestrial mammal in that predicament," which has incited him to exercise his æsthetic instincts and make that singular secondary decorative use of his respiratory pigment which could serve as an introduction to a consideration of the best part of human conduct. It is an accident that hæmoglobin is red, but it is an accident on which is founded the homœopathic magic of the virtues of red wine and pink pills and all sorts of curious beliefs and practices. Is it possible after all that some of the invertebrates are more emotional than we suppose?

CONFERENCE ON PHYSICALLY DEFECTIVE CHILDREN.—A Conference under the joint auspices of the Central Committee for the Care of Cripples, 19, Berkeley-street, London, W. 1, and the Newcastle Invalid Children's Aid Association, 17, Ellison-place, Newcastle-upon-Tyne, will be held at Newcastle on July 19th. The subjects for discussion will be the treatment and education of physically defective children and the best methods of administration and coördination to procure the same. Programmes will be issued shortly.

Annotations.

"Ne quid nimis."

"BACK-PRESSURE" AND HEART FAILURE.

IN this issue of THE LANCET we print the concluding section of Sir James Mackenzie's important dissertation upon the whole subject of Heart Disease and Pregnancy. These chapters will, we feel sure, have appealed to a wide circle of readers, coming as they do from the pen of one who writes with the authority derived from a lifetime of careful observation at the bedside. For many years Sir James Mackenzie has taken every opportunity of insisting, both by written and spoken words, that the heart muscle is the vital factor in the production of the phenomena of heart failure. The same notion can be found here and there in the writings of an earlier generation, but it appears only sporadically and without insistence. In the main, until recent years, there had been a tendency to ignore the heart muscle, and to focus attention on the heart valves. This undoubtedly resulted from the introduction of the stethoscope—an instrument which Sir James Mackenzie regards as a not unmixed blessing so far as the heart is concerned—for the discovery of cardiac murmurs, and their relation to valves found damaged at the post-mortem examination, led to the conclusion that the embarrassment of the circulation was due to the damaged valves. There followed the gradual evolvement of the back-pressure theory to explain heart failure. It was assumed that the damming back of the blood in the chamber behind the damaged valve—for instance, in the left auricle when the mitral valve is stenosed, caused that chamber to dilate and fail; the consequent congestion of the lungs led to failure of the right ventricle, which in turn brought about failure of the right auricle, tricuspid incompetence, general œdema, and finally failure of the left ventricle.

In his book on "Diseases of the Heart" (third edition, p. 6), Sir James Mackenzie points out that the back-pressure theory did not arise from the careful observation of individual cases passing through the different stages of failure, but from attempts to describe the process by arguing backwards from the evidence present in advanced conditions of failure. He further states that the theory has done much harm to individual patients and has hampered the advance of medical science. It is interesting to note in this connexion that in the second section of the present article, Sir James Mackenzie now considers that back-pressure does play some part in the production of heart failure in certain cases, especially in mitral stenosis. But the theory fails to account for a very large number of cases, and conspicuously in that common group in which, with the onset of an abnormal rhythm such as auricular fibrillation, failure with general congestion is abrupt in its origin. Nor is the new and abnormal rhythm in these cases itself the cause of the failure, for it is by no means uncommon to meet with cases of auricular fibrillation with little evidence of circulatory embarrassment. We are led to the conclusion that the determining factor is the degree of integrity of the heart muscle. The complete story of heart failure is not yet unfolded. The remaining chapters will assuredly be written, and much may be hoped in the future from that method of accurate clinical observation of which Sir James Mackenzie is a past master.

THE DENTISTS BILL.

THE Bill, as amended, remedies the failure of the Dentists Act of 1878 in many directions, though it does not give general satisfaction. We think that the Dentists' Committee may be congratulated on the general moderation of their demands. And having conceded the major claims of the Bill, is it really of much value to have a "special list,"

or a special term such as "Dental Practitioner," to distinguish the new-comers from the men at present registered? After all, it is not the profession who have to select the dentist but the general public, and when we allow the 4000 men carrying on practice under the protection of the present Register to be watered by the inrush of some 10,000 unqualified practitioners, how can we expect the public to recognise the distinction afforded by a duplicate list? After all, it is to the Dental Directory rather than to the Register that the small proportion of the public who makes inquiry as to the qualifications of a dentist will go, and there a man's professional record will be fully set out. And even now the 14,000 dentists of the new official list will not suffice for the great mass of the public. Of dentistry more than of any other calling may it be said "the harvest truly is plenteous, but the labourers are few." It is, therefore, to be regretted that the Bill omits or waters down important recommendations such as the provision of maintenance scholarships for one-half of the entrants to the profession in the next five years; a complete scheme of dental inspection and treatment of school children, and children under 5 years, and expectant and nursing mothers; the setting up of a public dental service in populous areas; and finally, the granting to public health authorities of powers in regard to dental disease similar to those contained in regard to tuberculosis in Section 3 of the Public Health (Prevention and Treatment of Disease) Act, 1913. These measures are the positive steps which must be taken if we wish to destroy quack practice. Prohibitions are well as far as they go, but provision is better, and in this respect the Bill before Parliament is lamentably wanting. The Bill has passed the second reading in the House of Lords, and if various interests are affected it is well for all parties to remember that we are living in an age of great reconstruction, and patience as well as boldness is required of us all.

NO NECK.

IT is a constant feature of mammalian anatomy to have seven vertebræ in the neck and seven only; the constancy is almost comic, for the supply is more than adequate for the walrus or dolphin, and much less than adequate for the giraffe. Man may well be content with seven. In a recent issue of *La Presse Médicale* is a description by Dubreuil-Chambardel of a rare condition associated with a developmental defect of the cervical vertebræ. Although medical literature contains many references to an analogous defect in the lumbar region, variations in the number of the cervical vertebræ are much more rarely met with, and have received correspondingly scanty attention. The writer in the paper under notice has collected the published observations relating to 12 cases of "les hommes sans cou" with the idea of presenting a complete clinical picture, the symptoms of which he designates as the syndrome of Klippel-Feil after the two men who first described it in 1912. From the anatomical standpoint the main characteristic of the syndrome is the partial or complete fusion of the cervical vertebræ. It is difficult to distinguish clearly the vertebral bodies in this fused mass—although usually the rudiments of three or four deformed vertebræ may be made out—the atlas and the axis often being so small and indistinguishable in the mass as to appear to be absent altogether. Another characteristic is the presence of a triangular opening on the posterior aspect of the vertebræ which may reach from the cranium to the thoracic region, constituting a true spina bifida. This condition, although not constant, was present in eight of the 12 cited cases. The third anatomical characteristic to which the author draws attention is the displacement upwards of the chest—the "cervical thorax"—owing to atrophy of the cervical column and elevation of the thoracic vertebræ and ribs. The three main clinical signs of the condition are: the absence of the neck, more noticeable from the posterior view; the limitation of head movements, more especially rotary and lateral movements; and the level of the base of the hairy scalp, usually below the biacromial line. To these signs may be added an associated scoliosis, with or without kyphosis, and the lowering of the mammary areolæ together with the elevation of the scapulæ. The ætiology of the dystrophy is obscure, the author preferring not to commit himself to an opinion as to whether the association of spina bifida is post hoc or propter hoc. Finally, the writer discusses the differential diagnosis of the condition, which was mistaken for Pott's disease in five out of the series of 12 cases, and for a simple torticollis in several other cases, in two of which section of the sterno-cleidomastoid was done, without, of course, any effect. The diagnosis rests mainly on the congenital character of the deformity, the absence of pain and swelling, the persistence and painlessness of nodding movements, while lateral and rotary movement is limited or absent, and the abnormally low level of hair growth posteriorly. An X ray photograph, however, settles the diagnosis conclusively. The deformity, which is not incompatible with a long life, appears to be commoner in men than in women, the proportion in the cases cited being 9 to 3.

POST-GRADUATE MEDICAL EDUCATION.

IN January last a Committee was appointed by Dr. Addison, as Minister of Health, to investigate the needs of medical practitioners and other graduates for further education in medicine in London, and to submit proposals for a practicable scheme of post-graduate medical education. The Committee, composed of the following members, Dr. H. J. Cardale, Sir Wilmot Herringham, Sir George Makins, Sir George Newman, Sir Robert Newman, M.P., Sir Edward Penton, Sir E. Cooper Perry, Mr. J. Dill Russell, and Dr. T. W. Shore, with Lord Athlone as chairman, has just issued its report.[1] The chief recommendation made is the establishment of a Central Post-Graduate Hospital and School to be devoted solely to post-graduate work. The hospital should contain at least 300 beds and its equipment should be complete and modern, and a fully developed out-patient department would be an essential. The allotment of beds is suggested as follows: medical 100, surgical 100, ophthalmology 12, skin diseases 12, gynæcology 24, children's diseases 12, venereal diseases 6, neurology 12, laryngo-oto-rhinology 12, observation and septic cases 12. Associated with this Central Hospital and School would be the great special hospitals of the metropolis. It is suggested that one of the existing under-graduate schools might be converted into such a centre, and the building of a new hospital for this special purpose is not recommended. The institution of a central office to link up post-graduate study in the United Kingdom with that of the continent of Europe and America is suggested. This central office should be in the charge of a whole-time principal officer and its committee of management should be responsible for the organisation of the system as a whole. Social facilities in the shape of reading rooms, a restaurant, and a library of periodicals should be attached to this central office, and a hostel for the convenience of doctors attending the courses from a distance would also, in the opinion of the Committee, be a desirable addition.

Another important recommendation is the establishment of an institute of State medicine whereat public health post-graduate work should be concentrated. Such an institute might be under the administration of the University of London, in a position analogous to that held by the Institute of Historical Research, and would provide instruction in public health, forensic medicine, toxicology, and industrial medicine to students from the United Kingdom, from overseas, and from foreign countries. The whole scheme as out-

[1] Report of the Post-Graduate Medical Committee. H.M. Stationery Office. 8*d*.

lined in the report would involve an annual charge of approximately £28,000. As constituent parts of the University of London, the school and institute would be eligible for inclusion in the list of institutions subsidised by the Treasury through the University Grants Committee. Fees from students would raise a certain amount, and from whatever source the balance, if any, is to be procured, it is not proposed to ask for support from local rates. These are the main conclusions of the Committee, which includes in its report some account of the history of the attempts to procure post-graduate facilities in London, with special reference to the efforts of Sir Jonathan Hutchinson and, more recently, of the Fellowship of Medicine. We trust that prompt action will be taken on the lines suggested by the Committee.

INJECTION OF ANTITOXIC SERUM AND SUDDEN DEATH.

FROM time to time cases of sudden death following the injection of antitoxic serum are recorded, sometimes even in healthy persons to whom the serum is given for prophylaxis. The prevalent view is that these distressing tragedies are due to anaphylaxis. In the *Journal of the American Medical Association* Dr. J. H. Lewis has advanced very cogently a new explanation. He points out that it should be impossible to produce death by subcutaneous injection of serum in ordinary doses. To produce acute anaphylactic death experimentally the antigen must get into the circulation rapidly. Paul Lewis found that from 6 to 10 c.cm. of serum injected into a sensitised guinea-pig (the most sensitive animal to anaphylaxis known) did not kill; from 12 to 20 c.cm. were necessary. But taking 6 c.cm. as the dose that will kill a 250 gm. guinea-pig, nearly two litres would be necessary to kill a 70 kg. man, if he were as sensitive as the guinea-pig, which he is believed not to be. Practically all the fatal cases are similar. A few minutes after injection the patient is seized with intense dyspnœa, followed by œdema and urticaria. The respiration ceases, but the heart continues to beat and death occurs within ten minutes. The sooner the reaction appears the more intense it is. These cases are inconsistent with the rate of absorption of serum from the subcutaneous tissue. This has been shown experimentally to be very slow by testing by complement-fixation the time of appearance in the circulation of horse serum in an animal subcutaneously injected. In a dog, injected with 10 c.cm., serum was first detected in the circulation 1½ hours after injection and was found present for 24 hours. To account for the presence in the circulation of serum in sufficient quantity to prove fatal in a few minutes, Dr. Lewis suggests that the injection was accidentally made into a vein. The subcutaneous tissue contains numerous vessels of good size and it is possible for the point of the needle to enter one. Then only a small amount of serum could be fatal to a sensitised person. A case of fatal intravenous injection of only one minim of horse serum into a man the subject of horse asthma has been recorded. The possibility of accidental intravenous injection is supported by experience of subcutaneous injection of oils and fat. Moller reported fat embolism 43 times in 315 patients injected subcutaneously with oily substances 3835 times. Febriger recorded a death following subcutaneous injections of olive oil in a patient suffering from stricture of the œsophagus. He developed hemiplegia and the necropsy showed fat emboli all over the body. Embolism after paraffin injections has also been described. A point which Dr. Lewis does not make is that the danger of injecting into a vein in the case of hypodermic injection of drugs has long been recognised. To avoid the danger of intravenous injection, Dr. Lewis recommends care before injecting to ascertain whether a blood-vessel has been injured. Aspiration should be performed to see whether blood can be drawn into the syringe. Another way in which serum may rapidly enter the circulation after hypodermic injection is on massaging the swelling produced, which Dr. Lewis says is a common practice; but whatever be done in America we have not heard of the practice in this country. He found that a dose of serum not big enough to kill a sensitised guinea-pig quickly proved fatal when the site of injection was massaged. This should be warning against the practice.

THE CORONERS (REMUNERATION) BILL.

A BILL has been amended in Standing Committee and read a third time in the House of Commons which has for its object the raising of the emoluments of coroners, who are now paid at a rate not changed since 1887. In view of present conditions, and of the importance and responsibility of the coroner's office, it would appear to be in the public interest that the remuneration offered should be such as to attract well-qualified men, and the qualifications necessary for a coroner are a knowledge of medicine and of law. In other words, the ideal coroner should have undergone the training and seen something of the practice of two learned professions. Nevertheless there were several members of the House of Commons who were evidently opposed to the Bill. One of these expressed disapproval of the fact that it was moved by a Member of Parliament, Sir T. Bramsdon, who was himself a coroner, and he contended that whether this was within the strict letter of the orders of the House, or not, it was utterly wrong. As a matter of fact, the Speaker had been consulted by Sir T. Bramsdon, and had ruled that his association with the Bill was perfectly in order. We fail to see that it can be "utterly wrong," as a matter of general principle, for a Member of Parliament, who has in some sense a personal interest in a particular piece of legislation, to abstain from furthering it or from impeding it. It is true that Members of Parliament are returned by their constituencies and that they have to consider the interests of their constituencies as well as those of the country at large. They are, however, if they are members of a particular profession or trade, experts with regard to it, and if without any concealment they take part in legislation directly or indirectly affecting it, their fellow members are well able to determine whether they act honestly in the general interest, or whether professional feeling is corrupting their judgments in a matter of public policy. There were members of the bar among the adverse critics of Sir T. Bramsdon, but it has never been urged that barristers should have nothing to do with legislation which provides remunerative posts for their profession. Nor has any consideration of the fact of their being personally interested prevented members of the House of Commons from providing themselves with salaries.

CHANCRE OF THE GUM.

IN a review of the literature of the subject, including the description of a personal case, Dr. Joseph Victor Klauder,[1] Assistant Professor of Dermatology and Syphilology in the Graduate School of the University of Pennsylvania, remarks that chancre of the gum is one of the rarest of extragenital chancres. Scheuer, in his work on "Syphilis of the Innocent," published in 1910, out of a total of 14,590 extragenital chancres recorded up to that date, states that only 97, or 0·66 per cent., were gum chancres. Since the appearance of Scheuer's book 15 cases of chancre of the gum have been reported up to 1919, making a total of 112 cases. The greater frequency of buccal chancres in some countries than in others is attributed by Dr. Klauder to the manner of eating and customs of different races and to racial customs of nursing and feeding children, and not, as might be supposed, to perversion of the sexual act. The chief source of infection is accidental contamination by various objects, especially

[1] Archives of Dermatology and Syphilology, May, 1921.

toothbrushes, toothpicks, and dental instruments. In all the reported cases the lesion on the gum has been single, though in one of Fournier's cases there was an associated chancre of the hard palate, and in Frossard's case a lingual chancre as well. The anterior part of the gum is involved almost exclusively, and the upper gum is more frequently affected than the lower, the usual site of the chancre being opposite one or more incisor teeth, sometimes the median incisors but more frequently the left lateral. There are usually two types of chancre of the gums. The first or erosive type varies in size from that of a split pea to that of an almond, and is sharply demarcated from the surrounding tissue. The surface is smooth and of a carmine colour. Although in exceptional cases the lesion may remain unchanged, it usually becomes infected, the surface being covered with a false membrane and the centre showing ulceration and necrosis. The second type of gum chancre appears from the first as a sharply circumscribed ulcer of variable size and shape. Infection of the periosteum not infrequently occurs, the symptoms of which make the diagnosis more difficult. The conditions from which chancre of the gum is to be distinguished are inflammation and ulceration due to various causes, as well as tumours such as fibroma, epithelioma, and sarcoma. The early appearance and extreme degree of the adenopathy are characteristic of chancre, and the diagnosis is confirmed by the Wassermann reaction and dark-field examination.

THE EXAMINATION OF GASTRIC AND DUODENAL CONTENTS.

THE introduction of fractional methods of gastric analysis has given a fresh impetus to the study of the secretions of the alimentary canal. Few gastro-enterologists are now content with the information given by analysis of a test-meal which has been withdrawn after an hour's gastric digestion. The main shortcoming of the old method was the indefinite indication which it supplied as to the actual degree of pyloric obstruction and gastric stasis present in any particular case. At the same time the technical difficulties of fractional analysis have delayed its universal adoption, and it is accordingly of interest to find the original devisers of the fractional technique now devoting especial attention to the examination of the "resting-juice," or "gastric residuum," as a means of clinical diagnosis. This has been the form of gastric analysis advocated for a considerable time by many of the French physicians, notably by Loeper, Pron, and Labbé, and there can be little doubt that it frequently yields information of the utmost value. In their latest communication,[1] Rehfuss and his co-workers in Philadelphia draw special attention to the conclusions which may be derived from knowledge of the volume of the fasting stomach content, and to the significance of the presence of food retention, altered acidity, pus, blood, and mucus. Especially do they point out the importance of septic conditions of the nose and throat as sources of the muco-pus frequently found in the stomach. The extraction and analysis of duodenal contents must necessarily present far greater difficulties than those attending gastric investigation; but in this field also advances continue to be made. Following the technique of Einhorn, an inquiry into the whole subject has recently been made by Mauban, of Vichy; his work [2] deals chiefly with technical methods for the passage of the duodenal tube, the quantitative estimation of the ferments and other constituents of the duodenal secretions, &c. It is to be expected that these and similar methods will, during the coming decade, yield information which will help to dispel the obscurity which at present veils so many of the problems of gastro-intestinal disease.

[1] W. W. Lermann, M. E. Rehfuss, and P. B. Hawk: Journ. Amer. Med. Assoc., May 14th, 1921, p. 1340.
[2] H. Mauban, Rev. de Médecine, 1921, No. 3, p. 146.

INDUSTRIAL CATARACT.

IMPORTANT evidence as to the causation of certain forms of cataract will be found in the May issue of the *British Journal of Ophthalmology*. The observation that glass-workers in this country were especially prone to the disease was first made by Mr. W. Robinson, of Sunderland, who published papers on the subject in 1903 and 1907. Afterwards bottle-makers' cataract was placed by the Home Office upon the schedule of diseases under the Workmen's Compensation Act. At the same time a committee of the Royal Society was appointed to investigate the causation of the disease, and researches were conducted upon the absorption of various radiations by the media of the eye. In 1915 a paper was published in the Proceedings of the Royal Society by Prof. A. V. Hill and Dr. G. Hartridge tending to prove that the heat factor was of primary importance, but up till that date, with the exception of cases occurring among the glass-makers, there was a lack of clinical evidence to support that view. This evidence, however, has since been forthcoming. Some cases have been published by Mr. B. Cridland, of Wolverhampton, in which men who work at iron-smelting furnaces have developed a form of cataract identical with that observed among the glass-workers. Mr. St. Clair Roberts, of Dudley, has collected 25 similar cases among the chain-makers, men who spend the whole of the working day either gazing into the fire to judge when the links are hot enough to weld, or at the white hot metal while hammering it on the anvil. Still more remarkable evidence is supplied by Mr. James J. Healy, who, after having had the opportunity of seeing the cases among the bottle-makers of Sunderland, has made special investigations among the tinplate millmen of Llanelly. "The work is unusually heavy," he says, "and the heat is very great, so much so that a person unaccustomed to the work could not stand in the centre of a mill for longer than about five minutes without feeling somewhat overcome." "All the men in the mills are exposed to infra-red rays from the red hot tinplates . . . the ultra-violet rays are negligible." Cases occurring in men who had been working under 15 years in the mill were rare, but of 354 men of 35 years or over, who had been at work in the mill for as much as 15 years, 144 were found to have lenticular opacities, which could be detected without dilatation of the pupils. On the face of it the evidence appears to be irrefutable that continuous exposure to excessive heat over a long period is an efficient cause of cataract. Prevention is not easy, for although, as Mr. Healy remarks, the wearing of suitably prepared triplex standardised goggles would keep back the heat rays from entering the eyes, some additional preparation would have to be found to prevent the otherwise inevitable collection of moisture and dust on the glasses. It is to be hoped that this may be done before long. Meantime it seems very unfair that although glass-workers are entitled to receive compensation by law for the development of cataract, other workers whose eyes are exposed to excessive heat are not. To quote from the *British Journal of Ophthalmology*: "The evidence adduced by Messrs. Cridland, Roberts, and Healy is so conclusive that there is every reason to hope that the Home Office will take steps to remove this anomaly." The Glass-workers' Cataract Committee of the Royal Society, we understand, are taking steps to this end.

CONGENITAL ATRESIA OF THE ŒSOPHAGUS.

ACCORDING to Dr. I. Seth Hirsch,[1] director of the Roentgen Ray Department, Bellevue Hospital, New York, who reports two illustrative cases, 146 verified cases of congenital atresia of the œsophagus have been reported up to July 1st, 1920, the first having been observed by Thomas Gibson in 1696. The commonest type which is met with in 70 per cent. of the cases

[1] Journal of the American Medical Association, May 28th, 1921.

is a blind upper sac measuring from 1 to 9 cm. in length with a lower sac opening into the trachea at or above the bifurcation. The two portions may or may not be connected by a thin strand of tissue composed of muscle fibre or fibrous tissue. Associated anomalies are frequent, being present in 59 out of 94 cases. The commonest is atresia ani, which was present in 24 cases. The period of survival which was noted in 120 cases has ranged from 1 to 14 days, five of the infants being stillborn and 15 dying on the first day of life. As regards the pathogenesis it is now generally conceded that the anomaly is due to a developmental error rather than to an inflammatory process as was once supposed, the condition being due to failure of closure of the tracheo-œsophageal septum.

THE I.M.S. DINNER.

THE annual dinner of the Indian Medical Service, held on June 15th at the Trocadero Restaurant, is a domestic gathering at which the Editor of the *British Medical Journal* and the Editor of *The Lancet*, and they alone, are invited to share the salt. Leave is scarce in the Service at present and passages still scarcer, and it therefore comes about that the dinner is representative of those who have seen ten years or more of the official practice of medicine in a country which contains a sprinkling of Europeans and 450 millions of other races. In the nature of things there is no possibility of a similar gathering in India itself. Hence the occasion is one of unique importance and the time that might have been wasted upon formal toasts and set speeches is free for the informal discussion of domestic policy. No one present asserted that the Medical Service is now a great reconciling influence in Indian life, for no one doubted it; nor was any hesitation felt in mentioning the colour difficulty, for senior native officers were present as an integral part of the Service. All agreed that as long as Britain was charged with the Government of India, so long would British medicine find a worthy place there and nothing but the best possible service could be offered. Sir Dawson Williams in a few wise words spoke of the support given to the Indian Medical Service in the past by the medical press of this country and of their community of interest for the future. To say more might be to transgress the sacred law of hospitality. But we should like to commend the Dinner Fund to those members of the Service who do not yet subscribe to it.

SIR THOMAS WRIGHTSON.

THE death of Sir Thomas Wrightson, at the age of 82, removes a figure notable alike in science and industry. Born near Darlington in 1839, Wrightson completed his education at King's College, London, and took up engineering as his profession, serving his articles with his cousin, Lord Armstrong, at Elswick. After a period of civil engineering work at Westminster, he took employment at the Teesdale Ironworks of Messrs. Head, Ashby and Co., later joining the firm, which then became Head, Wrightson and Co., Ltd. For many years he was vice-chairman, and later chairman, of this great business, being also a director of other companies and a prominent figure in the public life of the Stockton district. His political career was not marked with the uniform success which attended him in other directions, but his services won him a baronetcy in 1900. Wrightson's great contribution to physiology and physics, his "Enquiry into the Analytical Mechanism of the Internal Ear," was published in 1918,[1] when he was in his 78th year. In this work were combined the results of many years of study of aerial wave-form, with an engineer's survey of the cochlea considered as a machine. The comparative anatomy of the cochlea formed the subject of a luminous appendix by Prof. Arthur Keith; by means of his own ingenious "ohmograph" Wrightson had recorded a large number of compound sound curves of varying complexity, which he analysed by application of the "four stimulus" theory—i.e., the theory that a sound wave is a pressure variation implying a stimulus in hearing of four phases of the curve at maximum and minimum, and at the crossing of the zero lines, at each of which points the direction of change is reversed. Briefly, the authors showed the cochlea to be a mechanism capable of registering every complexity of the compounded wave and of passing it on to the sensorium in accurate record as nerve impulses, the final process of appreciation of these impulses (simple or compound) being, of course, central. Wrightson's work therefore gave to science an intelligible account of the genesis and nature of the peripheral stimulus concerned in the sense of hearing.

[1] See Review in THE LANCET, 1918, ii., 46.

CONGRESS OF MEDICAL HISTORY.

A CONGRESS on the history of medicine, initiated by Prof. Domenico Baduzzi of Siena, was held at Rome from Oct. 11th-14th, 1912, when the agenda paper included addresses on prehistoric medicine and mediæval anatomy. Last year a congress was summoned at Antwerp and next week, from July 1st to 6th, the Second Congrès d'Histoire de la Médecine will be held in Paris under the patronage of the Minister of Public Instruction and on the initiative of the Société Française d'Histoire de la Médecine. Prof. E. Jeanselme and Prof. W. Menetrier will preside at the meetings, which begin at 9 A.M. on July 1st in the historical museum of the Faculty of Medicine. An "exposition rétrospective médicale" is being put together to include books, manuscripts, engravings, statuettes, instruments, or other objects of historical value. A number of visits and excursions have been arranged to places of historical interest. The general secretary of the Congress is Dr. Laignel-Lavastine, 12 bis, place de Laborde, Paris.

THE annual meeting of the National Council for Combating Venereal Diseases will be held next Tuesday, June 28th, in the Morley Hall, Hanover-square, at 4.15 P.M. The annual report, the draft of which is now being settled, brings the proceedings up to May 31st.

WE are glad to print in full on page 1377 an interim report of the X Ray and Radium Protection Committee, for it is well that safeguards and precautions, wherever they have been found useful, should receive immediate and wide publicity. London is fortunate in having a sufficient number of recognised experts to constitute a representative committee which can meet frequently to confer and compare notes. Distance alone has stood in the way of choosing the committee from other centres of radiology. Liverpool and Manchester have been well to the fore in precautionary measures, and the London committee has profited by their experience.

THE last of the series of lectures delivered by authorities on different aspects of pathological research in its relation to medicine at the Institute of Pathology and Research, St. Mary's Hospital, was given on June 16th by Prof. W. Bulloch, F.R.S. His subject was the Use and Abuse of Scientific Medical Literature, and among entertaining anecdotes and criticism, destructive and constructive, of current medical journals Prof. Bulloch found opportunities to plead for a reduction in the mass of work published and an improvement in its quality. The course of lectures has been much appreciated by large and representative audiences.

THE SEMON LECTURE.—The Semon Lecture, a foundation of the University of London, will be delivered on Tuesday, July 5th, at 5 P.M., by Dr. Jobson Horne, President of the Laryngological Section of the Royal Society of Medicine, in the house of the Society.

MODERN ARTIFICIAL LIMBS.

THE WORK OF THE ARM-TRAINING CENTRE AT ROEHAMPTON.

BY C. JENNINGS MARSHALL, M.D., M.S. LOND.,
ASSISTANT SURGEON AND JUNIOR ORTHOPÆDIC SURGEON TO KING'S COLLEGE HOSPITAL.

WHILE the function of a lost lower limb has for centuries been capable of replacement with a fair degree of success, the achievements with the arm have remained on a very much less satisfactory basis—occasionally, as with the immortal Captain Cuttle, a lost hand has been replaced by some elementary instrument, but any instance in which even the simplest function has been restored has appeared as something remarkable. The rule has been that a lost arm has meant a sleeve as empty as Nelson's.

The recent advances in the structure of the artificial limb—advances confined to a mere score of years—have attracted a great deal of attention of late, particularly in the lay press. The publicity thus gained has, of course, had some beneficial effects, notably in inspiring confidence, both among the general public and those directly or indirectly concerned, in the means that are being taken to repair the most distressing wreckage of the war. One fact, however, does not seem to have emerged in its true perspective; some accounts read almost as if the limb were in itself endowed with a mysterious motive power, readily attached and placed under the control of the amputee. It would appear as if the fitting of the limb in itself restored the function that had been lost. The results must have been particularly deplorable in cases where the sufferer acquired such ideas, was fitted with the limb (perhaps not quite so efficient as the most modern, but still capable of very good work), and has gone forth expecting the advertised miracle. Disillusionment must come, demoralisation, despair, and resentment, the suspicion that the best limb has not been given and that there has been shabby, parsimonious dealing. The limb has been discarded and the man who should once more have become a self-reliant, self-supporting member of the community, turns into a drifting, discontented, and demoralised unit. This is history in hundreds of instances—history that happily is not only no longer being made, but is also being unmade.

It is history that need never have been made at all, for fairly obvious reasons. Comparatively little trouble is necessary to attain a decent degree of ease and function in the case of the lower limb prosthesis, for weight-bearing and locomotion are relatively simple questions; but to attach to a stump something that will handle, hold, swing, lift, and half a hundred other things is very different. The importance of instruction in the use of the new complicated appliance must be clear.

Necessity of Education in Use of Artificial Arm.

The fact that up to about three years ago some three-quarters of the men who had lost arms in the war had discarded their prosthesis as useless or as too much trouble cannot be more than slightly attributable to the defects of the limbs themselves, although considerable progress has been made since then in the construction of artificial limbs.

The small classes of case may first be eliminated—those of surgical unfitness to wear a limb, and the somewhat larger number of those with inefficient and unsuitable limbs. The remedies here are obvious. The remainder, the great majority, are cases where a man, physically capable, has simply not been educated in the use of a mechanically efficient limb. It is particularly necessary to note that such education must not be merely technical. The recovery of loss of function depends to a very great degree on the mentality of the patient, and the old admonition to "treat the patient as well as the disease" is nowhere more applicable than in the case we have under consideration; there is a liability to neglect the mental make-up of organic disease—(apart from; which fact one has the suspicion that the phrase is made responsible for a great deal of humbug!)

In war injuries we have to deal with three kinds of mental attitude. First comes what can be termed the sympathetic or coöperative type—those in this class will actively aid and participate in the attempts at restoration. Next is the antagonistic—those who do not wish for recovery, do not believe that it can be attained, and suspect and resist the treatment given (this attitude may be conscious, subconscious, or both). The third and worst group is that of entire indifference to recovery or non-recovery—the apathetic.

It will be obvious that to obtain results in the first group will be a comparatively simple matter if reasonable attention is given and the physical disability is at all capable of being surmounted. In the second there will be the necessity for the most open, frank treatment, the willingness to examine all alleged grievances, to reason, and to persuade. In the third direct argument and persuasion may be of use, but the best stimulant by far of the desired interest is the "atmosphere of recovery."

The work of the arm-training centre at Roehampton is an object-lesson in successful methods of overcoming such problems.

The Modern Artificial Limb.

Before giving a description of this work it will be useful to interpose a brief account of the modern artificial arm, although naturally it will be impossible to go into the details of the various types. This is all the easier inasmuch as, while there is a wide range of arms officially sanctioned by the Ministry for fitting, it may be said that there is a tendency to standardisation of principles of construction. It must not be thought that this means that the official policy is towards the stereotyped—on the contrary, it is strongly progressive. Suggestions for improvements are welcomed, and are sure to receive the fullest possible consideration; every facility is given to inventors, and inventions are constantly being brought forward by armless men—who, indeed, have been almost entirely responsible for the efficiency of the modern arm. New improvements are constantly and promptly added to the official list, and become available to all armless pensioners. One actually witnessed the encouraging reception given to an inventor by the Chief Instructor, himself an armless ex-officer and inventor; the appliance was appraised, suggestions were offered for further slight improvements, and a full account of the procedure to obtain recognition was given. The manufacture of limbs entirely by private firms further prevents stagnation (it is to be noted that the industry provides constant employment for a large number of limbless men).

Function of the Artificial Arm.

The complex functions of the upper limb can, of course, be reproduced only to a limited extent by any prosthesis. In particular, it is only the simpler of the hand movements that can be replaced. The joints will be considered seriatim; joints surgically preserved will obviously retain their function if adequate leverage and articulating stump be provided beyond them for the artificial limb.

1. *Shoulder-joint.*—The artificial shoulder remains passive and may permit abduction, flexion, and extension, or all of these. Rotation is not needed, being supplied at the "wrist." The limb swings at this joint actuated by power transmitted through the objects gripped from the other limb, which is holding the object at the same time. Nevertheless, anterior and posterior movements are to some extent produced when the elbow is actively moved by transmission cords.

2. *Elbow-joint.*—A variety of possibilities exist for the elbow-joint. It may be simply adjustable mechanically by the other hand; there are numerous forms of hinges

and catches permitting fixation at any desired angle. In other cases an active movement of flexion terminates in an automatic lock released either by another transmitted movement or by the sound hand. Again it is permitted in other instances to let the elbow swing freely by grip-transmitted power, as at the shoulder.

3. *Pronation and Supination.*—In no artificial limb does the forearm stump activate voluntary rotation—i.e., the stump acts merely as a lever. It seems to have proved impracticable so far to utilise the freedom of the radius, a fact which emphasises the difficulties in the way of the making of artificial limbs, for it might appear on the surface that this could fairly easily be done. In many limbs the "wrist" is fixed in the mid-prone-supine position; in some it is adjustable by the sound hand, but in the majority the appliance attached to the forearm is free to rotate at the wrist, being controlled by the grip of the sound side—as, for instance, where both hands hold a spade. In a few, however, rotation with locking by active movement is provided.

4. *Wrist Movements.*—Here again the joint, where a "hand" is fitted, may be either fixed in moderate extension, adjustable by the sound hand in the desired position in some cases, or be capable of movement by active, transmitted power, a mechanical lock operating at the end of such a movement where desired. In most instances the forearm terminates for working purposes in a tool whose attachment may be either "free wheel," adjustable, or fixed.

5. *The Grip.*—For æsthetic purposes it is desirable that the limb should terminate in some semblance of a gloved hand. The dress arm always provides this, and in some forms of limb a hand is fitted which is capable of performing light or even moderately heavy work. In most instances, as already stated, a tool is attached where moderate or heavy work is to be performed. As regards the production of the grip sustained hold on an object is always obtained mechanically—e.g., by springs, lock, or rack. Release of the grip may be by an active movement as in most forms of "hand" or by a device operated by the sound hand. Spring and release attachments are also fitted for the thumb on the same principles.

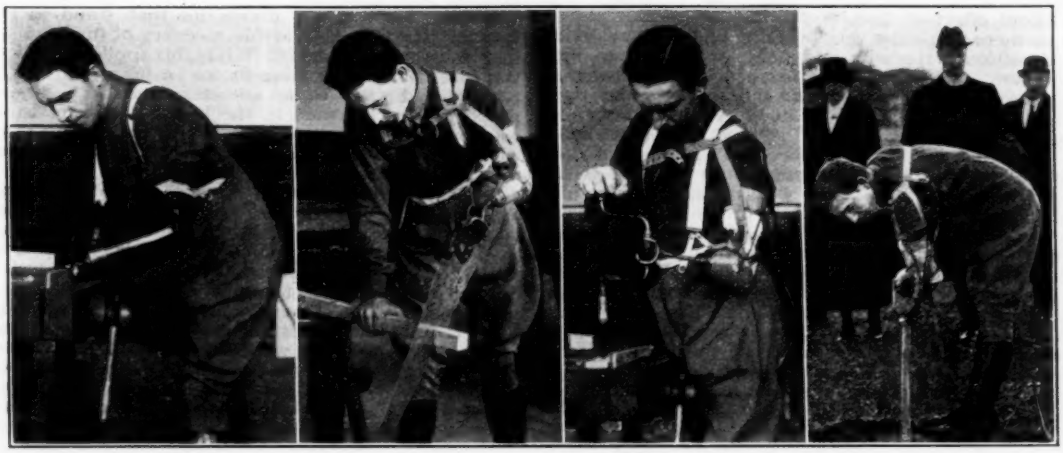
6. *Tools.*—It is in the appliances or tools attached to arms that probably the greatest advance has recently been made; of them again there is infinite variety, and one was greatly impressed by their ingenuity. Some of their qualities were particularly striking—strength, lightness, wide range of usefulness, and above all, ready and quick interchangeability. As an example might be quoted the "Mechanical C Hook," in whose invention the Arm Training School played a great part. This provides for gripping large or small objects, loose hold of large objects, and pressing down either large or small objects. The grip is released by transmitted power and is maintained by a spring. This is relatively a very wide range for such appliances. It might be stated here that most of the modern tools are the direct outcome of the work of the School at Roehampton, a fact which speaks volumes for the way in which its task is carried out.

With regard to the structure of the limb, those officially sanctioned show a great variety in material. Wood, leather, and metal, fibre and metal, duralumin, are most commonly used; a new substance, certalmid, is being more and more used in the making of buckets, being akin in its range of applicability to celluloid-acetone, but superior in cheapness, absolute non-inflammability, rigidity, and ease of application. This material is the result of much patient labour in the Ministry Research Laboratory attached to the hospital. One ventures to predict for it a great field of usefulness in orthopædic work.

Production of Movements in Artificial Arms.

It is perhaps necessary to point out that the armless man has to educate his remaining arm as a right arm—e.g., a left-handed amputee has to educate a remaining right arm to replace the function of the lost left arm.

Voluntary Movements.—These are produced on a very simple principle. The prosthesis is attached to the body firstly by a moulded segment appropriate to the site of amputation and secondly by a standard harness. This is made of a series of bands of broad webbing fixed to the segment applied to the body, converging somewhat usually at the middle of the back, and then expanding again to embrace the root of the opposite limb, the pressure being taken chiefly by the anterior axillary wall and the clavicle. No straps pass, in the most modern harnesses, in front of the chest—this permits a surprising degree of freedom of shoulder movement, and the harness and limb can be attached in a very few seconds and with great ease.



Photographs showing the very active rôle of which the artificial limb is capable. The standard "harness" is not being worn.

Motive Power.—From the sound side, which acts as the fixed (not as commonly supposed, the activating) point, two or three leather bands or Bowden wires pass in various relations to the affected shoulder through pulleys and thence to appropriate points of attachment on the artificial limb, leaving no slack. It follows then that if the sound shoulder remains fixed and the cord be put on tension by a movement of the affected shoulder, a pull will be transmitted to the insertion of the cord or wire. Roughly speaking, vertical, anterior, and posterior movements of the shoulder are available for transmutation into energy to reproduce the active functions of the limb. In addition others may be utilised—flexion of the humeral stump, even flexion of the elbow.

The function of the artificial arm will therefore be seen to depend on the following: active movements, rarely more than three in number, are derived from certain educated actions of the shoulder muscles; they are employed in altering the position or attitude of a part of the limb, or in releasing springs or catches; very uncommonly are they used in a sustained effort; springs, &c., are used for maintaining hold on an object; joints other than those selected for active movement may be either fixed, adjustable to various positions by the sound hand, or left freely mobile.

We are now in a position to see, first, the obvious need of the amputee for training, and the utter

futility of sending him forth without such instruction in the use of this really elaborate tool. Further, it is clear that great benefit will be derived from the advice of those experienced in the selection of limbs for particular occupations; there is a great deal in the actual selection of the limb and of the tools. The staff at the limbless hospital possess unique experience in such matters, and it would be the greatest pity were any policy of short-sighted economy to disperse and waste it.

Procedure at the Training Centre.

We can now appreciate the way in which the armless man is dealt with at Roehampton. He is admitted for a while as an in-patient at the limbless hospital in beautiful and healthy surroundings. He mingles with numbers of others with the same kind of disablement, hears them talk of their progress, sees what they can do. He begins to understand that restoration of function is taken for granted, as a thing beyond doubt. He is able to go freely anywhere, seeing armless men at work—digging, hoeing, using a pitchfork, wheeling a barrow even up an acute slope, swinging heavy hammers in driving for instance a pile—and doing all these things without effort or discomfort. He sees that the limb is no mere toy, but a very practical and strong working proposition. He will find that even a very high arm amputation is no bar to an efficient prosthesis; he may see a man disarticulated at the right shoulder, but doing all the above things. This man habitually does gardening solidly for eight hours a day, is no more tired than he used to be before the war, and finds practically no limit to his usefulness. A visit to the workshops will show him all branches of carpentry in progress; there are fellow armless men using plane, hammer, spokeshave, chisel, and the like. He will see that the work can be done cleanly and quickly. He finds that delicate work, too, can be done in spite of the loss of an arm. He begins to compare notes with the workers as to site of amputation, and as to individual experiences with different types of arms. He forms an opinion as to the limb that will be most useful in the occupation he proposes to adopt. With all this at the back of his mind he comes before the medical officer, who after a discussion of the case, and consideration of the surgical aspect, gives instruction for fitting. The man is offered in every case a choice or a large say in the ultimate selection of the limb, for surgically two or three limbs may be applicable; the advice of the staff is always available if he is in the slightest doubt as to which limb to select. Similarly, the tools attached to the limb are decided upon. The benefits of such a system will be apparent, for its great assumption is that the patient is treated throughout as a responsible and free agent. Fitting having been completed (this may take a considerable while for a cast of the stump has to be obtained as a preliminary to the making of a perfectly fitting bucket) the man begins his training. First, a short course of instruction is given in the elementary principles of carpentry, and then the man proceeds to work from simple to more and more complicated actions. It must be understood that the teaching of carpentry is undertaken merely as a means of instruction in the use of the limb, as is also the use of the spade, hammer, hoe, wheelbarrow, and the like. Each involves the learning of a different kind of action, and is studied for this purpose alone. It might be pointed out, however, that many men, both skilled and otherwise, have, as a result of their training at the centre, decided to adopt woodwork, metal work, and the other things used as methods of instruction as their means of gaining a livelihood. In such cases, after the period of arm-training, the man goes to the schools of the Ministry of Labour for a course of technical instruction. Many have thus come into a better status in the labour market than they enjoyed before the loss of the arm.

It is not long, as a rule, before the man begins to take a keen interest in his progress and to compete healthily against those starting with him in the use of the limb. He will become often inordinately proud of some little trick that no one else seems to have acquired. Practice with the limb needs no urging, and it is remarkable to note that the majority of men show a very complete degree of proficiency in from two to three weeks.

While most of the men have a chief preoccupation—their means of livelihood—and pay most attention to the factors bearing on this, there is another and most heartening aspect of the centre. This is in the world of sport and play. It will not be long before the athlete will find that there is no need for the armless man to forgo the pleasures he formerly derived from sport. He can see men who handle a cricket bat with the best, drive a golf ball, and play billiards—instances could easily be multiplied. Perhaps the most interesting of all was the man who fiddled, bowing with a limb fitted high in the arm. Nothing could be more stimulating than to learn that active participation in games is still open—the arm is gone, but the man can still work and play!

This, then, is the atmosphere which envelopes the armless man from the time of his entrance to the hospital. Most of the difficulties that stand in the way of the utmost possible recovery of function are met and conquered by it. While this applies chiefly to the cases newly becoming fit for a limb, it must be remembered that these are still much the largest proportion of the men in the hospital. There is, of course, a big out-patient attendance comprising cases with stump complications, and those requiring repairs or alterations in the artificial limb.

With regard to results, it remains to record an investigation carried out by Colonel MacLeod, medical superintendent, with a view to finding out to what extent the modern artificial limb was satisfactory. Four hundred and fourteen consecutive cases were questioned, the men were invited to make criticisms without reserve, and all such complaints were thoroughly investigated. It was found that of these 414 only 34 were not in good permanent employment, and that in almost every case of criticism the complaints were due to remediable causes in connexion largely with further changes in the stump since fitting.

The Research Laboratory.

This account of the work of the training centre would be very incomplete without a reference to the Research Laboratory attached to the hospital for the purpose of investigating the problems that constantly crop up with regard to the function, manufacture, and details of construction of artificial limbs. Here, again, each difficulty is squarely faced, and there is no rest until some solution is reached. As an instance of the resources of the department, one quotes the use of the Ultrarapid Kinematograph in the analysis of the relative movements of the lower limb and of the phases of the flexion of the knee in walking; a considerable improvement in the gait in thigh amputations has resulted from this investigation. Reference has already been made to certalmid, the valuable qualities of which material were clearly demonstrated.

The whole hospital gives one the impression of an institution strikingly akin to the orthopædic workshop, in which there is a "live" staff, thoroughly experienced in the work of which each member does his utmost to get results, leaving no factor neglected in order to make good as far as possible the disability of the limbless.

ROYAL SOCIETY OF MEDICINE.—The recently established Gold Medal of the Society was awarded to Sir Almroth Wright on Nov. 11th last when he delivered an address, but as it was not possible to have the medal ready for presentation it will be presented to him at the annual general meeting on Wednesday, July 6th, at 5 o'clock.

The meeting of the Dermatological Section in July will not take place.

X RAY AND RADIUM PROTECTION COMMITTEE.
A PRELIMINARY REPORT.

THE X Ray and Radium Protection Committee, representing the various radiological and other scientific bodies with their headquarters in the metropolis, after deliberating for some weeks, has issued a preliminary and admittedly tentative report. The document states present knowledge in regard to equipment, ventilation, and working conditions of X ray and radium departments, and undoubtedly there is a constant demand for guidance, both from individuals and institutions, upon such points.

The preliminary part of its work, the Committee states, will lead up to more extensive objects, entailing research, and offers of personal or other assistance are invited by the Committee and should be sent to the hon. secretaries, from whom the preliminary document may be had on application.

PRELIMINARY REPORT.

Introduction.

The danger of over-exposure to X rays and radium can be avoided by the provision of efficient protection and suitable working conditions. The known effects on the operator to be guarded against are: (1) Visible injuries to the superficial tissues which may result in permanent damage. (2) Derangements of internal organs and changes in the blood. These are especially important, as their early manifestation is often unrecognised.

General Recommendations.

It is the duty of those in charge of X ray and radium departments to ensure efficient protection and suitable working conditions for the personnel. The following precautions are recommended: (1) Not more than seven working hours a day. (2) Sundays and two half-days off duty each week, to be spent as much as possible out of doors. (3) An annual holiday of one month or two separate fortnights. Sisters and nurses, employed as whole-time workers in X ray and radium departments, should not be called upon for any other hospital service.

Protective Measures.

It cannot be insisted upon too strongly that a primary precaution in all X ray work is to surround the X ray bulb itself as completely as possible with adequate protective material, except for an aperture as small as possible for the work in hand.

The protective measures recommended are dealt with under the following sections: (I.) X rays for diagnostic purposes. (II.) X rays for superficial therapy. (III.) X rays for deep therapy. (IV.) X rays for industrial and research purposes. (V.) Electrical precautions in X ray departments. (VI.) Ventilation of X ray departments. (VII.) Radium therapy.

It must be clearly understood that the protective measures recommended for these various purposes are not necessarily interchangeable; for instance, to use for deep therapy the measures intended for superficial therapy would probably subject the worker to serious injury.

(I.) X Rays for Diagnostic Purposes.

1. *Screen examinations.*—(*a*) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 2 mm. of lead. The material of the diaphragm to be equivalent to not less than 2 mm. of lead. (*b*) The fluorescent screen to be fitted with lead glass equivalent to not less than 1 mm. of lead, and to be large enough to cover the area irradiated when the diaphragm is opened to its widest. Practical difficulties militate at present against the recommendation of a greater degree of protection. (*c*) A travelling protective screen, of material equivalent to not less than 2 mm. of lead, should be employed between the operator and the X ray box. (*d*) Protective gloves to be of lead rubber (or the like) equivalent to not less than ½ mm. of lead and to be lined with leather or other suitable material. (As practical difficulties militate at present against the recommendation of a greater degree of protection, all manipulations during screen examination should be reduced to a minimum.) (*e*) A minimum output of radiation should be used, with the bulb as far from the screen as is consistent with the efficiency of the work in hand. Screen work to be as expeditious as possible.

2. *Radiographic examinations* ("*overhead*" *equipment*).—(*a*) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 2 mm. of lead. (*b*) The operator to stand behind a protective screen of material equivalent to not less than 2 mm. of lead

(II.) X Rays for Superficial Therapy.

It is difficult to define the line of demarcation between superficial and deep therapy. For this reason it is recommended that, in the reorganisation of existing, or the equipment of new, X ray departments, small cubicles should not be adopted, but that the precautionary measures suggested for deep therapy should be followed. The definition of superficial therapy is considered to cover sets of apparatus giving a maximum of 100,000 volts (15 cm. spark-gap between points; 5 cm. spark-gap between spheres of diameter 5 cm.).

Cubicle System.

Where the cubicle system is already in existence it is recommended that: (1) The cubicle should be well lighted and ventilated, preferably provided with an exhaust electric fan in an outside wall or ventilation shaft. The controls of the X ray apparatus to be outside the cubicle. (2) The walls of the cubicle to be of material equivalent to not less than 2 mm. of lead. Windows to be of lead glass of equivalent thickness. (3) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 2 mm. of lead.

(III.) X Rays for Deep Therapy.

This section refers to sets of apparatus giving voltages above 100,000. (1) Small cubicles are not recommended. (2) A large, lofty, well ventilated and lighted room to be provided. (3) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 3 mm. of lead. (4) A separate enclosure to be provided for the operator, situated as far as possible from the X ray bulb. All controls to be within this enclosure, the walls and windows of which to be of material equivalent to not less than 3 mm. of lead.

(IV.) X Rays for Industrial and Research Purposes.

The preceding recommendations for voltages above and below 100,000 will probably apply to the majority of conditions under which X rays are used for industrial and research purposes.

(V.) Electrical Precautions in X Ray Departments.

The following recommendations are made: (1) Wooden, cork, or rubber floors should be provided; existing concrete floors should be covered with one of the above materials. (2) Stout metal tubes or rods should, wherever possible, be used instead of wires for conductors. Thickly insulated wire is preferable to bare wire. Slack or looped wires are to be avoided. (3) All metal parts of the apparatus and room to be efficiently earthed. (4) All main and supply switches should be very distinctly indicated. Wherever possible double-pole switches should be used in preference to single-pole. Fuses no heavier than necessary for the purpose in hand should be used. Unemployed leads to the high tension generator should not be permitted.

(VI.) Ventilation of X Ray Departments.

(1) It is strongly recommended that the X ray department should not be below the ground level. (2) The importance of adequate ventilation in both operating and dark rooms is supreme. Artificial ventilation is recommended in most cases. With very high potentials coronal discharges are difficult to avoid and these produce ozone and nitrous fumes, both of which are prejudicial to the operator. Dark rooms should be capable of being readily opened up to sunshine and fresh air when not in use. The walls and ceilings of dark rooms are best painted some more cheerful hue than black.

(VII.) Radium Therapy.

The following protective measures are recommended for the handling of quantities of radium up to one gramme: (1) In order to avoid injury to the fingers the radium, whether in the form of applicators of radium salt or of emanation tubes, should always be manipulated with forceps or similar instruments, and it should be carried from place to place in long-handled boxes lined on all sides with 1 cm. of lead. (2) In order to avoid the penetrating rays of radium all manipulations should be carried out as rapidly as possible, and the operator should not remain in the vicinity of radium for longer than is necessary. The radium when not in use should be stored in an enclosure, the wall thickness of which should be equivalent to not less than 8 cm. of lead. (3) The handling of emanation should, as far as possible, be carried out during its relatively inactive state. In manipulations where emanation is likely to come into direct contact with the fingers thin rubber gloves should be worn. The escape of emanation should be very carefully guarded against, and the room in which it is prepared should be provided with an exhaust electric fan.

Existing Facilities for Ensuring Safety of Operators.

The governing bodies of many institutions where radiological work is carried on may wish to have further guarantees of the general safety of the conditions under which their

personnel work. (1) Although the Committee believe that an adequate degree of safety would result if the recommendations now put forward were acted upon, they would point out that this is entirely dependent upon the loyal coöperation of the personnel in following the precautionary measures outlined for the benefit. (2) The Committee would also point out that the National Physical Laboratory, Teddington, is prepared to carry out exact measurements upon X ray protective materials and to arrange for periodic inspection of existing installations on the lines of the present recommendations. (3) Further, in view of the varying susceptibilities of workers to radiation, the Committee recommend that wherever possible periodic tests—e.g., every three months—be made upon the blood of the personnel, so that any changes which occur may be recognised at an early stage. In the present state of our knowledge it is difficult to decide when small variations from the normal blood-count become significant.

The Committee is constituted as follows:—

Chairman: Sir Humphry Rolleston, K.C.B. Members: Sir Archibald Reid, K.B.E., C.M.G., St. Thomas's Hospital; Dr. Robert Knox, King's College Hospital; Dr. G. Harrison Orton, St. Mary's Hospital; Dr. S. Gilbert Scott, London Hospital; Dr. J. C. Mottram, pathologist, Radium Institute; Dr. G. W. C. Kaye, O.B.E., National Physical Laboratory; Mr. Cuthbert Andrews. Hon. Secretaries: Dr. Stanley Melville, St. George's Hospital; Prof. S. Russ, the Middlesex Hospital. Address: care of Royal Society of Medicine, 1, Wimpole-street, W. 1.

THE CAVENDISH LECTURE.

Dr. Christopher Addison delivered the Cavendish Lecture before the West London Medico-Chirurgical Society in the Council Chamber of the Kensington Town Hall, London, on June 17th. Dr. F. J. McCann, who presided, said that it had been given to few men in the course of a single lifetime to rise to eminence in two professions. Dr. Addison after being a distinguished teacher of anatomy had become an important Minister of the Crown, and had filled the posts of President of the Local Government Board, Minister of Munitions, Minister of Reconstruction, and Minister of Health with conspicuous ability.

The Part of the State in the Prevention of Disease.

During the last century, said Dr. Addison, the country had become an industrial, as distinct from an agricultural, nation, and in the past the short-sighted policy had been adopted of practising the doctrine of individual effort and the survival of the fittest in its most unthinking form. Whatever that system might mean to the individual it was not "good business" to run up habitations anyhow, on any spare spot of ground, to bring young children into factory life, to have factories and industries so organised that they were prejudicial to the lives of those engaged in them. Our statute books were crammed with expedients adopted from time to time in the endeavour to prevent the effects of this kind of scramble. Among the legacies bequeathed to us by this condition of things it would be interesting to know what our slums had cost in Poor-law expenditure, in provision of sanatoriums and convalescent homes, in amelioration of physical disabilities, and in industrial inefficiency and unemployment resulting from those disabilities. The sum might even challenge comparison with our war debt. The best available knowledge and professional advice were needed to undo the evils of the past, but there was an opponent to be reckoned with in the shape of a certain type of latter-day economist who would readily spend millions on armaments, but would question every item spent on a system of preventive services.

The Need for Preventive Medicine.

Knowledge was naturally always in advance of its application. The average medical practitioner did what he could in the cause of preventive medicine by advising his patients, but most of his time was spent in attending to the sick and bringing them back to health. There was, however, a serious deficiency in regard to the teaching of preventive medicine in our present scheme of medical education. When an attempt was made to deal with causes which might affect in bulk avoidable disabilities, difficulties arose which were beyond the bound of individual effort, and to deal adequately with these causes public education was needed. Voluntary aid was most useful, as the report of Lord Cave's Committee had shown, in regard to hospitals, but the action of public bodies, with the power of the State behind them was also required. A State medical service was no panacea, and it was certain that large categories of the work to be undertaken in the combat against disease and disablement could only be dealt with by civil or lay authorities. Dr. Addison then described in some detail the various municipal bodies who shared in the administration of health matters, and referred to the waste and muddle that resulted from incoördination of the work of these bodies. In 1919 the public funds expended on direct health service and in payments to those who were sick amounted in England and Wales alone to nearly £46,000,000. At a time of national stringency and when the disastrous records of the war, with its multitude of men classified as unfit, were still fresh in our minds, it behoved all men of patriotic goodwill to examine the mass of sickness indicated by this expenditure, to inquire to what extent it was preventable, and to frame the measure of policy accordingly. We were now at the commencement of a new period of revelation and inquiry, and, though our information was as yet scanty and imperfect, the importance of acquiring it was being clearly appreciated both generally and in industry. An examination of the ailments for which insured persons sought medical advice in 1916 showed that excluding influenza, tuberculosis, pneumonia, malignant and other defined diseases, nearly 1 in 3 of the people required medical attention because of colds, nasal and bronchial catarrh, and digestive disorders. Here was presented an opportunity for common-sense instruction and for further research of well-nigh incalculable value. The difficulty was to devise ways and means of disseminating reliable information. It was of little use to give advice upon which the majority of the people could not act, and it was necessary to guard against the reactions which followed on advice which proved to be unavailing. There were many voluntary organisations which were exceedingly helpful though difficulties were presented by their multiplicity. Beyond these medical research on sound lines must be encouraged, for it was one of the most economical and rewarding directions of effort open to the community. Over and over again during the war, at the Ministry of Munitions and in the armies, it was found that small expenditure upon research under the superintendence of the Medical Research Committee produced saving which not only repaid the expenditure incurred, but more than paid the whole cost of all the Committee's efforts for a whole year, and in some cases for the whole time of its existence since 1912. There was also need for improvement in the home and in domestic habits and conditions. The medical schools might with great advantage pay more attention to instruction in the beginnings of disease and to the importance of those so-called minor ailments which were among the most disabling in so far as the mass of the community was concerned.

Summary of the Present Situation.

In concluding his lecture Dr. Addison said that well-considered effort was required in at least five directions: the spread of useful information and instruction, steady progress in the provision of better home conditions, encouragement of research and inquiry—not only into the more strictly scientific aspects of medical problems but extending beyond this into the field of employment and industrial conditions—improvement of facilities for early diagnosis and treatment, and a better organisation and direction of agencies charged with responsibility in health matters. At a time of national and world impoverishment we were confronted with a mass of physical disablement, much of which was realised, even with the knowledge

now available, to be preventable. Tens of millions a year were poured out in an endeavour to mitigate its ill-effects, while towards the removal of the causes of these effects our efforts by comparison were insignificant and disconnected. There was work here for more than one generation, but recent experience gave good ground for encouragement.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Medical Meetings.

WE are in the midst of a series of meetings of medical societies. The ninety-third annual meeting of the Swiss Medical Federation was held in Basle on May 28th and 29th. Several hundred practitioners were present. The opening paper on the first day, on Methods for the Extraction of Foreign Bodies in the Œsophagus, was read by Prof. Oppikoper of Basle. At a social gathering following, the production of a play entitled "Steinach" by medical amateur actors caused great amusement. The author is a leading Swiss neurologist, and I only mention the play to show that the medical world here has not much use for the Steinach operation and its propaganda. The morning session of the second day of the meeting was devoted to demonstrations in the various clinics and medical institutes of the town. Prof. Doerr of Basle read a paper on "Idiosyncrasies," followed by a discussion in which Profs. Sahli of Berne and Bruno Bloch of Zurich took a prominent part. The latter emphasised the great importance of idiosyncrasies as a cause of eczema, idiosyncrasy being probably the clue for the solution of the eczema problem.—The nineteenth annual conference of the Swiss Neurological Society took place in Fribourg on June 4th and 5th under the presidency of Prof. Robert Bing of Basle. The subject for discussion was Regeneration in the Nervous System. Prof. Bing approached it from the clinical point of view, Dr. Perret of Montreux as a surgeon and Prof. Hedinger of Basle contributed a valuable paper from the pathological and anatomical side.—The Swiss Society of Surgeons is meeting in Aarau on June 25th and 26th. Surgery of the Gall Ducts will be the subject for a general discussion.

Small-pox near Basle.

In Basle and in Oerlikon near Zurich there is at present an outbreak of small-pox. The disease was brought to Basle by a German railway official. So far we have in Basle 19 cases with one death. At Oerlikon there are 97 cases; none of these had ever been vaccinated except one lady aged 65, who had been vaccinated when 5 years old, and one other patient who was vaccinated 30 years ago. These two epidemics should be a warning signal to our country, which has no compulsory vaccination. Compulsion was rejected some 20 years ago by a people's referendum. There is now a great rush to the vaccination stations and a movement is afoot to re-introduce compulsion by an appeal to a better-informed electorate.

Imitations of Salvarsan.

There was never a time when imitations and sophistications of drugs was so frequent. During the war nearly all countries placed embargoes on the import of medicaments, and owing to this the supply became scanty. The drugs rose in price and in consequence became a popular object of smuggling. Switzerland, with its high exchange rate, soon attracted the smugglers. In the back restaurants of Basle morphine, cocaine, and salvarsan were bought, sold, and re-sold. The fact that many persons engaged in the speculative trade of drugs had no knowledge whatever of their pharmacology enabled certain unscrupulous vendors to profit and to sell their customers imitations. The most prominent of the drugs imitated was salvarsan. Dr. Hunziker, director of the health office of Basle, who investigated the question, at a recent meeting of the Basle Medical Society gave a description of some samples of counterfeited salvarsan. A very clumsy substitute was contained in a bottle of green glass, roughly sealed, bearing the inscription: "Original package for Oversea Trade. Neo-Salvarsan 0·3. Contents 500 g." Chemical analysis showed that the yellow powder consisted of sulphate of barium and chromate of lead. A bricklayer of Basle had brought this bottle from a German plasterer for 6000 marks (400 francs) The contents of a similar bottle were found to consist of dust of silicates and rye flour. Three bottles, each containing 500 g. of a yellowish powder, had a label similar to those on the small original packages. The inscription, "500 g. Neo-Salvarsan and 0·4 g. Salvarsan" was sufficient to rouse suspicion. The contents were sulphate of barium, chromate of lead, and a yellow aniline dye-stuff, probably naphthol yellow S. In the trade of these bottles were engaged a hairdresser, a beer retail merchant, and a baker. But the most dangerous imitations of all were those resembling the small, much used salvarsan packages. A parcel with several hundred samples was found by the Basle police at a short distance from the German frontier. The labels closely resembled the original ones, but showed several slips; the name Höchst a. M. was spelled Höchs, in the English text the word "prohibited" ran "prohibitet," and the name of the firm Brüning was wrongly spelt. The contents, a yellow powder, looked very much like the original salvarsan, but consisted only of dust and of salt stained with yellow ochre. The dangers to the public health of this illegitimate trade are obvious, but quite apart from the spurious products the rough handling of the authentic salvarsan by the smugglers is apt to produce oxidisation, when the arsenic components may become more toxic.

BRITISH PHARMACEUTICAL CONFERENCE.

THE 58th annual general meeting was held in Scarborough last week. The President, Major E. Saville Peck, gave an address upon British Pharmacy and its Possibilities. He drew attention to the addresses delivered in recent years on the need for the representation of pharmacists upon the Pharmacopœia Revision Committee, on the institution of an Army Pharmaceutical Corps, on the advisability of the separation of prescribing and dispensing of medicines and the necessity for pharmaceutical research. The President outlined the present unsatisfactory position of the practice of pharmacy, and urged members to work for the establishment of a distinct profession of pharmacy on the lines of that which obtains upon the continent and is suggested in the United States of America. He advocated a wider preliminary education for all those entering the calling, and pointed out the advantage to be gained by insisting that apprentices or students of the Pharmaceutical Society should pass one of the School Leaving Certificate Examinations before registration. Major Peck also advocated the establishment of a university degree in science with pharmaceutics as one of the final subjects, and strongly urged the institution of a Fellowship Examination to include biochemistry and bacteriology with clinical microscopy. Such an examination, and the training required therefor, would enable students to carry out clinical analyses and so assist in diagnosis of disease. It would train men for the work of clinical assistants to medical men in the primary and secondary health centres contemplated by the Ministry of Health. Such men are also required by wholesale houses for the purposes of preparing vaccines and for research upon new drugs and remedies. He urged that the professional spirit should be reawakened in the rank and file of pharmacists and that the local associations should be stimulated to discuss pharmaceutical professional matters. These associations should send delegates to an annual conference so that the considered opinion of members might be focussed and handed on to the council of the society. He advocated the formation of an association of teachers from the various schools of pharmacy recently instituted, the associates to meet annually to discuss subjects in furtherance of pharmaceutical education. He looked forward to the time when a central unifying body should be formed to coördinate and combine all these forces—education, qualification, professional conduct, and research. This would work for the evolution of a profession of pharmacy, which coexistent and interdependent with that of medicine, would assist in the combating of disease and in the improvement of the health of the nation.

Correspondence.

"Audi alteram partem."

PERMANGANATE OF POTASH AS A STYPTIC FOR SEROUS SURFACES.

To the Editor of THE LANCET.

SIR,—Every surgeon knows the difficulties happening during the separation of adhesions between the intestines and other organs in the abdomen, particularly the often serious hæmorrhage from the separated surfaces. To arrest this various measures have been applied, such as pressure by means of tents or tampons, thermo-cauterisation, or suture. All of these demand much time and are not without danger in themselves. In cases of hæmorrhages from superficial wounds of the serosa after separation of adhesions, I have, since 1901, used kalium hypermanganicum cryst. with the best and quickest results. I lay hold of one or more crystals of the salt with a pair of dissection forceps and apply them to the bleeding points. On contact with this substance the blood coagulates, a clot forms, and in place of the hæmorrhage there is to be found a black, dry, aseptic scab. The bleeding stops immediately. After some seconds the scabs are cautiously removed with fine blunt forceps, and on the wounded surface of the serosa there remain only smooth black spots.

The moment that permanganate of potash touches the blood, oxygen is set free in a nascent state and an exceedingly powerful aseptic effect results. If the bleeding surface is large, a pinch of permanganate crystals is folded in a piece of lint and applied continuously to the wound for a few seconds. I have employed this styptic method for nearly 20 years without any complications.

I am, Sir, yours faithfully,

JOHN DSIRNE, M.D.,
Late Chief of the Surgical and Urological Clinics of the University of Moscow.

Constantinople, May 24th, 1921.

X RAY LESIONS AND MEDICINAL WATERS: A SUGGESTION.

To the Editor of THE LANCET.

SIR,—The losses, amongst radiologists, which we all deplore, may well lead us to ask whether we have sufficiently recognised the resources of treatment. An expectant attitude has sometimes prevailed amongst medical men in the treatment of chronic affections and those of which the origin is still obscure. But there are in nature powerful remedial forces which have often given good results in just those chronic and toxic maladies in which other means have failed. We refer to air, climate, medicinal waters. The retarding as well as the exciting action of some of these forces in the evolution of disease—catarrh, rheumatism, syphilis and tuberculosis—is well known. With regard to cancer, there is evidence that the ingestion of certain bicarbonated waters ,stimulates the development of malignant growths of the stomach and liver, and accelerates the fatal issue. As the bicarbonate of sodium in ordinary doses produces no such effects, we are led to conclude that these waters, in which, as we know, the salts are *ionised*, have properties different from those of the pharmaceutical preparations. Are there not then, perhaps, waters that, combined with climatic treatment, may delay or even prevent the cancerous process? Within the last 20 years the science of medical hydrology has advanced by experimental methods, and something more than clinical experience entitles us to consider such an hypothesis. We propose to compare certain effects of X rays and radium with those of medicinal (and especially arsenical) waters. And we suggest that there are sufficient grounds to make it advisable that those radiologists who are liable to blood and tissue changes as a result of exposure to X rays should submit themselves to courses of climatic and hydrological treatment.

1. *Blood and Tissue Changes after Exposure to X Rays.*—Heinecke first noticed after the exposure of an animal to X rays a diminution of the circulating lymphocytes and a selective destruction of lymphogenic tissues. A maximum loss of red and white cells has been noticed about 48 hours after exposure, and five to six weeks may be required for the re-establishment of the blood.[1] Cases have been recorded in which after a single treatment for cancer the alteration of the blood was such that it became irreparable, the patient dying cachectic, in spite of the cure of the local lesion. Certain observers have stated[2] that the "resistance to cancer and tuberculosis in animals is attended by an increase in number of the circulating lymphocytes, and that the resistance as well as the lymphocytosis may be destroyed by X rays in proper dosage."

The action of radium and X rays upon the tissues is described as: in minimum doses stimulative, and in larger doses destructive and toxic, the nucleus of cells being especially affected.[3] There is reason to think that a definite and continuous dosage may be capable of producing a "habit of growth" in sensitive tissues. It has been shown that whilst radium may bring about the destruction of cells in lymphosarcoma, with toxic symptoms and rise of temperature, the same agency, in a different dosage, may stimulate the growth of malignant tumours. The effect of radium and X rays upon the skin is: erythema, brownish discoloration, branny desquamation, with pain and dryness; later, a deeper red coloration, slight blistering, and the swelling and ulceration which constitute radio-dermatitis. The skin is ultimately replaced by scar tissue, without glands or hairs, and with characteristic pigmentation. The chronic stage shows keratinisation with papular growth, forming and shedding scales, and going on towards epithelioma.

2. *Effects of Arsenic and Arsenical Waters.*—Arsenic and sulphur are two elements existing in the colloidal state in natural medicinal waters, and visible under the ultra-microscope as particles in rapid motion. Both have specific actions upon the skin and upon deeper tissues. We are now concerned with arsenic. When it is taken internally, the following changes in the skin have been observed: a short phase of epithelial proliferation; followed by hyper-keratinisation; an atrophic phase, affecting principally the interpapillary processes, the skin becoming planiform with partial destruction and detachment of the epidermal cells. In chronic arsenical poisoning a variety of exanthemata are observed. In small repeated doses arsenic is believed to cause increase of assimilation and to stimulate the formation of hæmoglobin or red cells. In massive doses, arsenic resembles X rays in causing destruction of the cells of the liver, kidneys, capillaries, and blood. Cases of aplastic anæmia following the administration of salvarsan have been recorded.[4] Certain pathological tissues (malignant lymphoma, syphilis) appear to be especially susceptible to the dissimilative action of arsenic.

The European arsenical waters are represented by La Bourboule and Levico. Clinical experience has for many years proved the value of waters of this class in anæmia, "lymphatic affections" and chronic dermatoses. The La Bourboule water, of which one litre is chemically equivalent to 21 drops of Fowler's solution, forms what may be called an isotonic arsenical serum. Certain doses were injected into the veins of animals after extreme venesection, and the process of recovery watched.[5] These and further experiments by one of us have shown the superiority of this water to artificial serums, both from the point of view of the restoration of the red and white cells and of the hæmoglobin.[6]

Some recent writers[7] hold that in cancer the normal lipoid equilibrium of the tissue cells is disturbed, causing a change in the permeability

of the cellular envelope, and that this disturbance of the lipoid equilibrium is increased by bicarbonated waters. Dr. Jacques Loeb has shown that the fertilising action of spermatozoa can be reproduced in all its details by exposing the ovum for one minute in sea water, to which has been added a certain quantity of monobasic fatty acid, and thereafter for about half an hour in sea water, of a certain determined saline proportion. In this process soaps are formed and break down the lipoid equilibrium of the cell. The negative electrolytic ions of the mineral water pass through the cell membrane and precipitate the colloidal substance. Loeb has emphasised the essential part played by electrolytes in many of the phenomena of life. What could, on a priori grounds, be more capable of modifying the equilibrium of the cell and the permeability of the cell wall than natural waters with their complex and varied electrolytic elements? The observation of colloid disturbance, and also of anti-anaphylaxis, provoked by the injection of the Bourboule water, appears to show a marked action of these waters on cellular permeability. When we reflect that the majority of chronic diseases are in their nature toxæmic, with anaphylactic phases, is it not reasonable to hope to find elements amongst natural waters which have a selective action upon particular cells and in particular toxæmias? Arsenic is *par excellence* a selective remedy.

3. *Interaction of Remedies.*—An association and interaction of remedies appear to be necessary for the process of recovery. According to this principle, exemplified in hydrological medicine, waters, in natural alliance with climate, modify various predispositions to premature degeneration and functional failure. But it is necessary to select the climatic and other influences, so that they will contribute to hydrological treatment—that is, will augment and not lessen its effect. In the case of the X rays worker a moderate degree of altitude and the action of cold and of the sun (frigotherapy, hydrotherapy, heliotherapy), as on the mountain slopes of Auvergne or Tyrol, or in the north-east of Scotland, should definitely assist the action of waters. One of us has observed during many summers in the district last mentioned the prevention and retardation of degenerative processes and recovery from anæmia and toxic conditions, especially among brain workers, who made a habit of spending a certain number of weeks annually in the north country. The recovery of strength and colour resulted sometimes from the northern climate alone, but more often from climate associated with waters. Dr. Robert Knox, and in France Dr. Bélot, insist upon the necessity of prolonged change of air for radiologists. The latter has made a habit, since the introduction of X rays, of absenting himself for three months in each year, and has had as yet no lesions of the skin, and the blood has remained normal. (Many operators, as we know, have lesions of the hand with a normal blood.) We venture to go one step further, and to suggest that in combined climatic and hydrological treatment, carried on from year to year, may be found an effective means of preventing and retarding the serious changes, both in the blood and tissues, to which some of our colleagues are liable.

We desire to express our acknowledgments to Prof. W. S. Lazarus-Barlow and to Dr. Stanley Melville for valuable data.

We are, Sir, yours faithfully,

R. FORTESCUE FOX,
PAUL FERREYROLLES.

June 6th, 1921.

References.—1. See J. C. Mottram and J. R. Clarke, Roy. Soc. Med. Proc., vol. xiii., Sect. Electrotherap., p. 25; and Colwell and Russ, Radium, X Rays and the Living Cell, p. 187. 2. H. D. Taylor, W. D. Witherbee, and J. B. Murphy, X Rays and the Blood, Jour. of Exper. Med., vol. xxix., p. 53. 3. W. S. Lazarus-Barlow, Biological Effects of Small Quantities of Radium, Arch. of Radiology and Electricity, June, 1919; A Critical Review of the Cancer Problem, Med. Science, Abstracts and Reviews, November, 1920. 4. H. Gorke (Munich), Medical Science, Abstracts and Reviews, March, 1921. 5. Fleig, Les Eaux Minérales Milieux Vitaux. 6. Billard and Ferreyrolles, Les Eaux Minérales en tant que Sérums Artificiels, Congress of Hydrology, Algiers, 1909. 7. Billard, Journal Médical Français, December, 1920.

THE DIAGNOSIS OF DYSENTERY BY THE SIGMOIDOSCOPE.

To the Editor of THE LANCET.

SIR,—Dr. P. Manson-Bahr and Dr. A. L. Gregg in your issue of May 28th and Dr. A. F. Hurst on June 4th deal with the sigmoidoscopic diagnosis of dysentery. Fifteen years ago I pointed out the importance of a sigmoidoscopic examination in all cases of ulcerative colitis, and since the war this has become the recognised means of diagnosis in chronic dysentery. Without such an examination it is impossible to be certain what kind of ulceration is present, what stage it has reached, or how extensive the area involved. No doctor would be willing to treat an ulcerated throat without first looking at it, and yet one frequently sees cases of ulcerative colitis that have been under treatment for months without an examination of the inside of the bowel having been made.

I agree with Dr. Hurst that it is easy to distinguish between the ulceration of amœbic dysentery and that of bacillary dysentery, although their symptomatology may be similar. Several other types of ulceration of the colon can be distinguished. When cases of chronic dysentery are systematically examined with the sigmoidoscope it is found that both amœbic and bacillary dysentery are frequently followed by an ulcerative colitis of a different type from the original infection and due no doubt to secondary infection, usually with a streptococcus. This secondary infection is much more chronic than the original disease, and has often little tendency to get well. It is the cause of many of the cases of chronic dysentery sent back to this country from the East, and is similar, if not identical, to the form of ulcerative colitis which is indigenous as a primary condition in this country. It does not react to emetin injections or to antidysenteric serums.

It is important that when this secondary type of ulceration has developed it should be recognised, and this can only be done by sigmoidoscopic examination. I believe it to be essential that all cases of dysentery which do not clear up in reasonable time under proper treatment should be examined to see what type of ulceration is present in the colon. These severe secondary ulcerations of the colon clear up very satisfactorily after an appendicostomy, and it is our experience at St. Mark's Hospital, where we have to treat a considerable number of such cases, that when an appendicostomy is performed in time complete recovery is the rule. Too often, however, a surgeon is only called in as a last resort, and when the patient has little or no recuperative power left. When treated at a stage before the general health is seriously damaged the rapidity of recovery is often astonishing.

I feel sure that when a systematic examination of the colon with the sigmoidoscope in all cases of dysentery and ulcerative colitis becomes the rule, we shall have far fewer deaths from these conditions than is the case at present. As Dr. Hurst points out in his letter, the sigmoidoscope is also the only satisfactory check to treatment in these cases, and no case can be considered cured until an examination shows that the mucosa is normal.

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY, F.R.C.S.

Hyde Park-place, W., June 17th, 1921.

CONTROL OF VENEREAL DISEASE: THE RED CROSS REGIONAL CONFERENCE.

To the Editor of THE LANCET.

SIR,—Your report of this Conference, appearing in your issue of June 18th, quotes the Secretary of the National Council for Combating Venereal Diseases as saying: "A noteworthy point is the fact that the question of self-disinfection, which has appeared such an important and vexed factor in the campaign in England, provoked very little interest at this Conference of experts." The reason is not far to seek, and was due to the fact that the National Council for Combating Venereal Diseases (who had been adopted by the League of Red Cross Societies in Geneva as

the recognised channel in this country for communication on these subjects) had selected as delegates Colonel L. W. Harrison, Dr. F. N. Kay Menzies, and Mrs. C. Neville Rolfe (Mrs. Gotto), who are well-known opponents to the immediate self-disinfection policy.

The Society for the Prevention of Venereal Disease, in reply to a request that they might be represented at the Conference, received a most courteous reply from the Secretary of the Danish Red Cross, intimating that he would be pleased to welcome delegates from our Society, but that the selection of delegates was entirely in the hands of the British Red Cross. Upon my communicating with the British Red Cross, I was told that the Society for the Prevention of Venereal Disease could not be represented, as the above-mentioned delegates had already been selected. The views of that very large section of the people in this country, who support the policy of immediate self-disinfection advocated by the Society for the Prevention of Venereal Disease, had therefore no opportunity of being presented to the Conference, and this important aspect of venereal disease prevention was largely neglected, mainly through the action of the National Council for Combating Venereal Diseases.

I am, Sir, yours faithfully,

H. WANSEY BAYLY,

Harley-street, W., June 17th, 1921. Hon. Sec., S.P.V.D.

THE PROPERTIES AND COMPOSITION OF ETHANESAL.

To the Editor of THE LANCET.

SIR,—I have administered the new general anæsthetic, described under the name ethanesal in your issue of June 4th by Dr. R. L. M. Wallis and Dr. C. L. Hewer, to 32 patients (15 male and 17 female). In three cases a little ether was used in the induction stage. In all but two the apparatus used was the warm ether "bomb." By this short trial a favourable impression has been formed; the narcosis has been at least as good as with ether, and the after-effects unusually trifling, except that one woman developed on the next morning a mild bronchitis which lasted for several days; she had, however, caught cold just before the day of operation. 28 oz. used in the bomb for maintenance only lasted for 307 minutes, or 5·47 oz. per hour, as compared with 4·7 oz. per hour of ether under similar conditions.

Several factors probably combine to make the difference greater than should be—chiefly the general length of the operations, which were, perhaps, twice as long in the ether cases. It would be of interest to know from the manufacturers precisely what quantity of ketones, and how much CO_2 and ethylene, are added to the ether in this new anæsthetic.

I am, Sir, yours faithfully,

K. B. PINSON,

Anæsthetist, Manchester Royal Infirmary.

June 19th, 1921.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of THE LANCET.

SIR,—I readily admit that I have not grasped the "principles" upon which Dr. I. Harris in his paper of your issue of May 21st bases his conclusions on the pharmacology of digitalis. First, it is impossible to agree with the primary assumption that a large systolic output will necessarily give rise to a correspondingly large pulse pressure and vice versâ. In the presence of an increased systolic output the degree of pulse pressure will depend wholly upon the degree of vaso-dilatation or constriction present. Pulse pressure may even be lessened in the presence of increased systolic output. Again, it is impossible to agree that, if under the influence of digitalis the pressure in the veins is not increased, these will be able to pass a greater amount of blood per time-unit into the heart at the increased pressure necessary to cause the rise of intra-cardiac pressure depicted by Dr. Harris. Finally, simple considerations of physics prevent agreement with the statement that a force acting *a tergo* can propel in a given time-unit through a system of elastic tubes, such as the arterial, a greater volume of fluid in the absence both of increased intra-tubal pressure or tubal dilatation. In view of the fact that his "principles" are based on such errors and disregard of elementary physical laws Dr. Harris need feel no surprise if one is unable to grasp them.

I am, Sir, yours faithfully,

Eltham, June 20th, 1921. W. J. GRANT.

THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—A memorandum issued by the Council of the British Medical Association on Jan. 29th, 1921, and reprinted in its Annual Report of April 30th, contradicts statements in Dr. R. Fothergill's letter published in your last issue, and at the same time answers his questions. Dealing with the qualifications of a body to represent the profession as a whole, that memorandum states: "The body must not profess to promote the interests of the community rather than those of doctors"; "Bodies exclusively or mainly scientific have no concern with medical politics"; "They must be trained in expressing opinions on such matters" and, speaking of the Association, that "Its members are trained, both locally and centrally in dealing with medical politics."

I am, Sir, yours faithfully,

N. HOWARD MUMMERY.

Vere-street, W., June 17th, 1921.

THE TREATMENT OF DIABETES.

To the Editor of THE LANCET.

SIR,—In your issue of June 18th Dr. Ph. Horowitz has disagreed with a statement which I made in the review of his book. I stated that sodium nitro-prusside test was a better test for aceto-acetic acid than for acetone. I based that statement on the work of Dr. W. H. Hurtley (THE LANCET, 1913, i., 1160). Aceto-acetic acid can be detected in a dilution of 1 in 400,000, whereas acetone can only be detected in a dilution of 1 in 20,000. With the ferric chloride test, aceto-acetic acid can be detected in a dilution of 1 in 100,000 if it is dissolved in water, but in urine the test is much less sensitive because the pigments of the urine interfere with the reaction. It follows, therefore, that the nitro-prusside test for aceto-acetic acid will often be positive when the ferric chloride test is negative. It has also been shown by Folin and Emden independently that acetone is present in very small amounts in diabetic urine when it has been freshly passed. When the urine has stood for a little time, the acetone increases in amount owing to the decomposition of the aceto-acetic acid into acetone. Hence, if the nitro-prusside test is positive in fresh urine, it means that aceto-acetic acid is present in the urine.

I am, Sir, yours faithfully,

June 17th, 1921. THE WRITER OF THE REVIEW.

EARLY DIAGNOSIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—May I add a few words to the discussion on this subject. I should like to emphasise the great value of antitoxin in non-diphtheritic tonsillitis. Fifteen to twenty years ago I saw a large number of severe septic throats. I always gave antitoxin before swabbing, and found that it was just as useful in those throats that were streptococcic, as in the diphtheritic, and the results just as rapid and striking. Indeed, after a short experience, I was able to assure the boy that within 12 hours he would feel well, and this was almost invariably the case; the actual physical signs took rather longer to clear up, about 24 hours. I never tried normal horse serum, and so cannot be sure as to the exact curative agent. Of the cures themselves I had and have no doubt; of recent years I have no experience, as (owing to a new drainage system) I have no sore throats.

I am, Sir, yours faithfully,

MEDICAL OFFICER TO A BIG PUBLIC SCHOOL.

June 19th, 1921.

Public Health Services.

THE OXFORD CONTRIBUTORY HOSPITAL SCHEME.

THE final report of the Voluntary Hospitals Committee commends the system of weekly contributions, carried further than elsewhere by the Radcliffe Infirmary and County Hospital at Oxford, as an admirable instance both of the benefits of a system of collections from wage earners and of the advantages of hospital coördination. The Radcliffe, which is the only large hospital in the northern part of Oxfordshire and is connected with the medical school of the University, appears to perform the functions both of a "secondary health centre" and of a "teaching hospital" as defined in the Dawson report. It takes all the active cases from the Poor-law infirmaries in its district, and has succeeded in linking up with its work the primary and cottage hospitals as well as, to some extent, the district nursing service within its radius. The hospital has recently organised with conspicuous success a scheme for obtaining weekly contributions, not only from workmen, but from the whole wage-earning population of the towns and villages in its area. The conditions of this scheme are stated as follows:—

1. A contributor of 2*d.* a week is entitled to free treatment.
2. In the case of married people, when the husband and wife each subscribe 2*d.* a week, their children are also entitled to free treatment up to wage-earning age, and from then until they are earning adult's wage, each child pays 1*d.* a week. The children of a widow or widower are also entitled to free treatment up to wage-earning age on the 2*d.* contributions of their parent.
3. Non-contributors will in future be expected to contribute towards their maintenance in the hospital, but no payment is required from old-age pensioners.
4. Every case must be accepted by a doctor or surgeon as suitable for hospital treatment.
5. No supporter will in future require a "turn."

Although the scheme was only established in September last, there are already 35,000 contributors from 288 firms and 165 village aid associations. The aid committees are represented on the board of governors and it is proposed that they shall appoint one-third of the management committee. The scheme is expected to yield something like £25,000 of "new" money.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Carlisle.

Dr. J. Beard's annual health report for the year 1920 is a very complete one. As in other towns a marked increase took place in the number of births, and for 1920 the birth-rate was 24·7, the highest recorded since 1906. The death-rate was 12·5, and the infant mortality rate 80, the same as that recorded for England and Wales. "About 130 privies still exist in the outlying parts of the city, which were added in 1912, most of which will be replaced by water-closets when the proposed extensions to the sewers are completed." There are no cesspools or ashpits in the city; portable receptacles for house refuse have been in use for the last 20 years. Most of the refuse is tipped into old claypits or on low-lying land near the river. "The tips are covered with soil, and no nuisance arises from this method of disposal." A small destructor deals with offal from the slaughter-house and refuse which might cause a nuisance. An unusual arrangement is in operation by which all cows purchased by city cowkeepers are purchased subject to examination by the veterinary inspector, and any found to be unsatisfactory are returned to the sellers. Of 221 new cows purchased under this system in 1920, 10 were found by the veterinary inspector to be unsound and were returned to the sellers. Eight samples of milk were examined for tubercle bacilli with a negative result. During May and June there was a return of the influenza, 20 deaths being registered from this cause and 13 from acute influenzal pneumonia during the period mentioned. (Several towns, e.g., Sheffield, Blackburn, Halifax, and Sunderland, had similar attacks somewhat earlier in the year.) Otherwise the prevalence of ordinary infectious diseases was low, there being two deaths from diphtheria, one from enteric fever, and four from measles in an estimated population of 57,697. In Carlisle, as in other towns, there was an increased mortality from pulmonary tuberculosis during the war. A decline in this mortality began in 1918, and in 1920 the deaths were 36, making a rate of 0·63 per 1000 of the population, the lowest ever recorded in the city. The corporation have no residential institution of their own, but reserve 20 beds in the Blencathra Sanatorium for early and intermediate cases of pulmonary tuberculosis. There is no provision for advanced cases. During the year Coledale Hall was purchased for the purpose, but, owing to opposition inspired by unreasonable fear of the spread of infection to the neighbourhood, the project was given up, and the hall handed over to the education committee for an open-air school. The school nurses also act as tuberculosis nurses—a very satisfactory arrangement. Encouraging results have been obtained from the treatment by tuberculin of specially selected cases, mostly children.

A treatment centre for venereal diseases has been established jointly by the corporation and the county council at the Cumberland Infirmary, and during the year 112 male and 51 female patients were treated for these diseases. Midwives attended 821 out of the 1425 births—about 57 per cent.—and sent for medical help in 92 cases. In 65 cases a notification was received of the intention to substitute artificial for breast-feeding. Dr. Beard gives a list of the reasons put forward to justify artificial feeding, and comments as follows:—

> "An examination of the above figures suggests that in a number of instances the midwife should have refused to countenance the substitution of artificial feeding of the infants. This would have avoided the many risks connected with artificial feeding, and secured the only food natural to infants, which is cheaper, cleaner, safer, and more easily digested. It is difficult to believe that any mother would withhold her milk from her infant on purely personal grounds if the advantages of breast-feeding and the risk attending artificial feeding were put sufficiently strongly before her by a midwife during the time she is in attendance. It should also be remembered by the midwife that in this connexion her duty to the mother commences at the time she is engaged to attend upon her, and not merely with the commencement of labour."

Thirty-six cases were admitted to the Corporation Maternity Hospital (opened in May, 1920) during the year. No cases occurred of maternal death, puerperal sepsis, or ophthalmia neonatorum. Three mothers were unable to breast-feed owing to albuminuria with general anasarca, cardiac disease, and profound anæmia respectively. An antenatal clinic is held at the hospital (attended by 46 expectant mothers since its opening), and also an infant consultation clinic. There are four voluntary infant welfare centres and a day nursery, with an average attendance of about 12, all linked up with the corporation scheme, by the corporation maternity and child welfare medical officer acting as medical supervisor. Dr. Beard thinks the infant mortality could be still further reduced were it not for unnecessary artificial feeding, and points out that the debility caused by artificial feeding continues long after infancy, as "proved by the fact that 50 per cent. of the children dying between the age of 1 and 5 years were artificially fed." Complete information is given as to the result of all the 56 notified cases of ophthalmia neonatorum. Both eyes were affected in 43 cases, one eye in 13, and all the cases resulted in recovery except two, in which the sight of one eye will be slightly impaired owing to damage to the cornea. There were 11 deaths from whooping-cough, which Dr. Beard points out is regarded by parents as a minor ailment, and says:

"I am not sanguine enough to hope for much alteration in the apathy and callousness of certain parents unless and until whooping-cough is made compulsorily notifiable."

Carlisle, like other towns, is suffering from overcrowding. We learn from the report that, owing to the lack of building enterprise, only 218 houses have been erected since 1906. No action can be taken with regard to overcrowding, "as it is impossible, until new houses are built, to displace families from their present dwellings." For the same reason "difficulty has been experienced in remedying more serious defects found in houses," and action with regard to the Crown-street and Caldewgate unhealthy areas will have to be delayed. Lowther House, one of the two common lodging-houses, is now owned by the corporation, and the second has been closed as from Dec. 31st as being "totally unfit." The chief sanitary inspector is of opinion that there is unnecessary smoke from factory chimneys, but no action has been taken beyond warnings. It is now well recognised that black smoke from chimneys serving boiler furnaces is unnecessary, and it is to be hoped that the national experience of purer air, as the result of the unfortunate coal dispute, may lead ultimately to a crusade in the matter. The inspector also reports a reluctance on the part of the managers of some milk shops to provide covers for milk storage vessels, and that the present method of disposing of the slaughter-house refuse at the tips is very wasteful.

County Borough of Eastbourne.

The annual health report for 1920 submitted by Dr. W. G. Willoughby is very satisfactory. The temporary rise in death-rates which occurred during the war has subsided. The death-rate was 10·5 per 1000 of the Registrar-General's estimate of the population. The infant mortality rate was 59·8 per 1000 births, 20 less than the rate for England and Wales. The death-rate from pulmonary tuberculosis, 0·56 per 1000, was the lowest ever recorded, and the death-rate from infectious diseases was very low. Other signs of progress are the opening of an open-air school in June, and of a maternity and infant hospital in March. Fifty-eight of the new municipal houses have been opened during the year, but Eastbourne, like other towns, is suffering from overcrowding. This is not surprising when we consider that the population of Eastbourne increased from 34,960 in 1891 to 52,542 in 1911; that the inhabited houses in the same period increased from 5190 to 8967, and that during the war there was a cessation of house-building. The yearly average of houses built during the five years before the war was 103, and during the preceding quinquennium was 132; 138 hut tenements are temporarily occupied, and it is estimated that 150 houses are definitely required over and above the present scheme of municipal building. There are about two males to three females in the population of Eastbourne, and 50 per cent. of the working female population are domestic servants. During 1920 the death-rate among the males was 10·75 per 1000, and among the females 7·20. With a population of this constitution one can hardly attribute the change in the infant mortality rate to anything but increased knowledge and more intelligent care. Thus during the three closing years of last century the infant mortality rates were 139, 145, and 121 respectively, while during the last three years the infant mortality rates have been 74, 57, and 59·8. This is a wonderful record. From the table on p. 39 of the report we note that vaccination in Eastbourne has been almost given up. During 1920 the vaccination officer received 709 certificates of conscientious objection. The births in the vaccination district during 1919 were 750. During the last decade the yearly average of births has been 871, and the yearly average of successful vaccinations 165. During the year 52 cases of venereal diseases were treated at the clinic (opened in September, 1919). Eastbourne has its own tuberculosis hospital of 24 beds, but, in addition to this, 88 patients were sent away to various sanatoriums and hospitals. One of the needs is a hospital for non-pulmonary tuberculosis. Dr. Willoughby mentions that tentative proposals have been made for a joint Sussex arrangement, but have so far come to nothing. The results achieved at Alton have been so good that one cannot help being surprised at the slow progress of this movement for converting cripples into useful citizens.

We congratulate Eastbourne on having a very complete maternity and child welfare scheme, including, as it does, a well-attended antenatal clinic, a hostel for unmarried mothers, a maternity home, an infants' home, and a municipal home-help. There is also a dental clinic for the mothers, and arrangements have been made during the year for boarding out illegitimate infants, some of them at their own homes. The council subsidise a creche, which accommodates 16 children, and one wonders why it is necessary to have a creche in Eastbourne, and whether, with a population of a constitution such as that of Eastbourne, it would not be a sounder policy and more economical to "board out" the babies at their own homes, as has been done for some of the illegitimate babies. The proportion of births attended by midwives is only 27·4 per cent., a very different state of things to that obtaining in industrial towns. Eleven cases of ophthalmia neonatorium were notified during the year without any resulting blindness, though it is not mentioned if any damage to the eyes occurred. The report concludes with a housing survey, to which some reference has already been made.

SCHOOL MEDICAL SERVICE.

Hull.

The service here comprises, besides the school medical officer, two whole-time assistants and five part-time officers, along with two part-time ophthalmic and orthopædic surgeons and a school dentist. The department works in coöperation with the public health, the tuberculosis, and the infant welfare departments. During 1920, 17,799 children underwent routine medical inspection, and 1472 were re-examined. The school dentist found among 4411 children between 6 and 7 years of age, 2550 requiring treatment. In 1917 only 9·2 per cent. of the children had sound teeth, as against 20·5 per cent. in 1920. The number with clean mouths has been increasing steadily each year. It is difficult to believe that any public benefit can result from the high price of milk, yet we are told, "The rapid rise in price and greatly diminished consumption of milk may have called into play more profuse salivation than hitherto, and food instead of being washed down with a drink is formed into a more natural and digestible bolus."

An interesting investigation into the visual and auditory capacity of 4695 children between 6 and 7 years of age was made; 950 having vision of less than 6/12 in both eyes were submitted to a test of refraction, and in the case of 250 glasses were found to be necessary. Unfortunately, the scheme for a large open-air camp school and a residential open-air school has had to be abandoned on account of the expense involved, and so far there are no schools with open-air class-rooms, though the teachers are encouraged to develop playground classes. The organiser of physical training reports a steady improvement in the results obtained from physical exercises, which is noticeable in the carriage and the movement of the children, and we are told that the introduction of the new syllabus into the schools has been responsible for a large amount of this improvement.

Bootle.

There have been certain changes in the administrative staff during the past year, Dr. F. T. H. Wood succeeding Dr. W. H. Daley as school medical officer and medical officer of health, and Dr. Kate M. Cowe succeeding Dr. J. M. Taylor as assistant school

medical inspector. Dr. Cowe gives part of her time to maternity and child welfare work, thus coördinating these two branches.

There was an average attendance of 11,424 children out of 12,928 on roll, and 39,073 routine and 12,002 special inspections, while 35,863 re-examinations were made. The number found at routine inspections without any physical defect totals 27·4 per cent., as compared with 27·3 per cent. last year, 19·9 per cent. in 1918, and 16·5 per cent. in 1917. The more important percentages of physical defects this year are malnutrition, 6·6 per cent; defective vision, 13·1 per cent.; enlarged tonsils, 7·5 per cent.; lung disease, 8·7 per cent. These figures correspond closely to those of last year. The number of children referred for further observation or treatment was 62·5 per cent., as compared with 57·6 per cent. in 1919, both high percentages. The scheme for establishing an open-air residential school has unfortunately been deferred, and as there is no provision for open-air education in Bootle, Dr. Wood suggests the establishment of playground classes wherever possible. Comment is made on the wide variations in the methods employed in the physical training of the children, and it is suggested that the appointment of an organiser of this department would do much to systematise and coördinate the instruction. Bootle has three evening play centres, which are a great attraction, and which have been well attended throughout the year. These centres have done much to promote the social and physical welfare of the children. Examination of children attending secondary schools revealed such children to be better in physique, nutrition, and cleanliness than the ordinary average elementary school child. Of 69 children of school age who died during the year, 18 died from tuberculosis, 11 from diphtheria, 7 from pneumonia, 5 from heart disease and rheumatic fever, 5 from accidents, 4 from scarlet fever, and 3 from measles. The incidence of tuberculosis here revealed is very striking.

Leamington.

The average school attendance here is 1927; 879 routine and 802 special inspections were carried out. The number of children re-examined was 381. No child suffered from malnutrition, and only three cases of definite pulmonary disease were found. Out of 5787 children inspected by the nurse, 791 were found to be unclean. The anthropometrical work done by Dr. W. L. Goldie is interesting. In estimating the cephalic index he found on examining 200 boys and 218 girls that 10 boys and 16 girls were dolichocephalic, or had cephalic indices below 75; 127 boys and 151 girls were mesaticephalic, or had cephalic indices from 75 to 80; and 63 boys and 51 girls were brachycephalic, where the cephalic index was above 80. He has also made investigation into the colour of the eyes and the comparative lengths of the index and ring fingers, and found among other things that an index finger longer than the ring finger is nearly twice as common amongst boys as amongst girls.

ROENTGEN SOCIETY.—The annual general meeting was held on Thursday, June 16th, at the rooms of the Royal Photographic Society, 35, Russell-square, London, W.C. The following officers and members of council were elected for the ensuing year. President: Prof. J. W. Nicholson, F.R.S. Vice-Presidents: Dr. G. H. Rodman, Sir Ernest Rutherford, F.R.S., and Sir William Bragg, F.R.S. Hon. Treasurer: Mr. Geoffrey Pearce. Hon. Secretaries: Mr. E. A. Owen, D.Sc., and Dr. J. Russell Reynolds. Hon. Editor: Major G. W. C. Kaye, D.Sc., and 12 members of council. A discussion on "The Physics of the X Ray Tube" was opened by Major Kaye. An Exhibition of Modern X ray Tubes, and a demonstration of the New Portable Coolidge Outfit—British Thomson-Houston Co., Ltd.—was given. The attention of members is called to the exhibition of Radiographic Prints arranged by the Rontgen Society in the rooms of the Royal Photographic Society, which will be open daily (Sundays excepted), during June from 10 A.M. to 5 P.M.

Medical News.

UNIVERSITY OF CAMBRIDGE: *Diploma in Hygiene.*—The University of Cambridge, in response to a communication from the League of Red Cross Societies at Geneva, has established a new Diploma in Hygiene. In order that the scheme may assume an international aspect, it is hoped to bring together men representing the views of different countries—that is to say, candidates from advanced countries, such as America and Scandinavia, as well as those from the more recently reorganised nations of Eastern Europe, may avail themselves of the facilities provided in these classes. The training is primarily intended to benefit those who wish to familiarise themselves with English methods of sanitary science and practice and to return to their own countries holding an official certificate that they are qualified to act as officers of health. The diploma is open to candidates from all countries outside the British Dominions who possess a qualification to practise medicine or surgery which, though not registrable in Great Britain, is recognised by the authority of the country in which the candidate practises. The diploma is not registrable by the General Medical Council of Great Britain and Ireland. The full course must extend over a period of nine calendar months, and all candidates must have matriculated and resided in the university for not less than two terms or for one term and during a long vacation course. The examination is divided into two parts and the requirements for each part are similar to those demanded for the Diploma in Public Health with the exception that no detailed knowledge of English public health laws and statutes will be called for. It appears to be more important that candidates should become acquainted with the general principles of the English code of sanitary legislation than that they should possess a detailed knowledge of the legal duties and responsibilities of our sanitary authorities. Arrangements are now being completed to ensure lodging accommodation not only for D.P.H. students, but for the students who intend to take the diploma in hygiene.

The Secretary to the State Medicine Syndicate is Mr. J. E. Purvis, Public Health Laboratory, Cambridge.

MEDICO-LEGAL SOCIETY.—The annual general meeting will be held at 11, Chandos-street, Cavendish-square, London, W., on Thursday, July 7th (not Tuesday, June 28th, as previously announced), at 8.15 P.M. At 8.30 P.M. a paper will be read by Prof. A. Louise McIlroy on "Some Factors in the Control of the Birth-rate," which will be followed by a discussion. Lord Justice Atkin has been nominated by the Council of the Society as President.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—The annual general meeting of the Federation will be held at 11, Chandos-street, London, W. 1, on Tuesday, June 28th, at 5.15 P.M., when the annual report of the Executive Council will be presented and the officers elected for the ensuing year. The President, Sir Berkeley Moynihan, will preside.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: NAVAL, MILITARY, AND AIR FORCE HYGIENE GROUP.—A meeting of this group will be held at the house of the Society, 1, Upper Montague-street, London, W.C., on Thursday, June 30th, at 4.30 P.M. Colonel H. W. Grattan, Deputy Director of Hygiene, War Office, will read a paper on the Coöperation between Civil and Military Sanitary Authorities during a Grave National Emergency.

THE Research Defence Society will hold its annual general meeting on Wednesday, June 29th, at 3.30 P.M., at the house of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W. The chair will be taken by Lord Lamington. A short address will be given by Dr. H. H. Dale, F.R.S., on the work of the National Institute for Medical Research. Specimens will be shown. All interested are invited to attend.

ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND.—The annual meeting of this Society was held in the Royal College of Physicians on June 15th, Sir James Craig, the President, being in the chair. The amount given grants during the year was £1201 10*s.*, as compared with £1139 7*s.* 6*d.* last year. The amount received from branch treasurers showed an increase of over £88. There has been a marked increase in receipts from dividends and interest on investments—£924, as compared with £653 last year. Revenue from all sources for the year was £2915 6*s.* 11*d.*, as compared with £2539 12*s.* 8*d.* in 1920, and the balance for this year is £1508 2*s.* 6*d.*, as compared with £1255 1*s.* 8*d.* last year.

LONDON MEDICAL EXHIBITION.—The eleventh exhibition is arranged to be held in the Central Hall, Westminster, S.W., on Oct. 3rd, 4th, 5th, 6th, and 7th next.

Dr. Sidney C. Lawrence, after 15 years' tenure of the post, has resigned his appointment as Medical Officer of Health for Edmonton.

Mr. Henry P. Sturgis, upon his retirement from the post of chairman of the Royal London Ophthalmic Hospital, which he has held for the last 24 years, has been presented by members of the committee and medical staff with a handsome silver salver, as an expression of their appreciation of his services.

SOUTH LONDON HOSPITAL FOR WOMEN.—A garden fête, pound day, and sale of work will be held to-day (Friday) from 3 P.M. Princess Helena Victoria has promised to attend and will receive purses. Tickets of admission 3 to 5 P.M. 2s., after 5 P.M. 1s., may be obtained at the hospital (South Side, Clapham Common, S.W.4) which will be open to inspection.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At an extraordinary comitia held on June 15th, Sir Norman Moore in the chair, the resignation of his membership of the College by Jugalkisor Adhya was received and accepted. Sir Humphry Rolleston was appointed a representative of the College on the Court of Governors of the University of Sheffield in place of Dr. T. D. Acland. A resolution was passed to the effect that every candidate for the Conjoint Diploma should be required to produce evidence of adequate training in diseases of children and that the final examination should include examination in this subject.

OXFORD OPHTHALMOLOGICAL CONGRESS, 1921.—The twelfth annual meeting of the Congress will take place on Thursday, Friday, and Saturday, July 7th to 9th next. The annual dinner of the Congress will take place in the Hall of Keble College at 7.45 P.M. on Thursday, July 7th. Members will meet informally at 7.45 P.M. on Wednesday, July 6th in the Hall of Keble College. The proceedings of the meeting will take place in the Department of Human Anatomy in the University Museum, kindly lent for the purpose by Prof. Arthur Thomson, and will consist of addresses, demonstrations, a scientific and a commercial museum. An outline of the programme is as follows: Thursday, July 7th: The Congress will be opened by the Master, Mr. Sydney Stephenson; at 10.5 A.M. a discussion on "The Causes of Infection after Extraction of Senile Cataract" will be opened by Dr. Victor Morax, of Paris. The following will take part in the discussion: Dr. A. Maitland Ramsay (Glasgow), Dr. T. Harrison Butler (Leamington Spa), Mr. John Hern (Darlington), Mr. E. H. E. Stack (Bristol), Mr. P. H. Adams (Oxford), Mr. Burdon-Cooper (Bath), Mr. Rayner D. Batten (London), Mr. N. C. Ridley (Leicester). The annual general meeting will be held at the conclusion of the discussion. During the afternoon the following will read papers: Mr. R. J. E. Hanson (London) "Stereoskopometry"—a suggested standard test; Mr. Arthur Greene (Norwich), Petrosal sinus sepsis; Dr. Wm. Wallace (London) Epidiascope demonstration of War Injuries of the Fundus, illustrated by water-colour drawings. On Friday, July 8th, in the Department of Human Anatomy, at 10 A.M., the Doyne Memorial lecture will be delivered by Mr. E. E. Maddox on "Heterophoria." 11 A.M., Dr. Charles Russ (London), An instrument which is set in motion by the eye—i.e., by vision, or by proximity of the human body—e.g., the hands. 12.30 P.M., Mr. John Hern (Darlington), Experiences of 606 and its substitutes in eye diseases. 2.30 P.M., at the Eye Hospital, Mr. N. C. Ridley (Leicester), the trench operation for chronic glaucoma, with account of cases; Dr. T. Harrison Butler (Leamington Spa), A plea for early diagnosis and operation in chronic glaucoma, with some remarks upon the treatment of acute glaucoma; Mr. P. H. Adams (Oxford), A modified operation for chronic glaucoma; Mr. B. Cridland (Wolverhampton), Some points in the performance of the Lagrange operation for chronic glaucoma. On Saturday, July 9th, in the Department of Human Anatomy: 10 A.M., Dr. T. Harrison Butler, Loss of vitreous during cataract extraction; 10.30 A.M., Mr. Percival J. Hay (Sheffield), Sight-testing with coloured test types; 11 A.M., Dr. Hamilton McIlroy (Glasgow), Some points of interest in the work of a school oculist. The Scientific and Commercial Museums will be open in the Department of Human Anatomy from 9,30 A.M. daily. Members who propose to be present are requested to send the attendance fee (one guinea) to the hon. secretary, Mr. Bernard Cridland, F.R.C.S. Edin., Salisbury House, Wolverhampton, at their earliest convenience, and at the same time to intimate whether they desire rooms reserved in Keble College, and their intention or otherwise to be present at the annual dinner.

MEDICAL GOLF COMPETITIONS.—*Medical Golfing Society:* The annual tournament was held on June 16th on the Walton Heath Golf Course. The day was very successful and the pleasure of the competitors was largely due to the excellent condition of the course. The results of the various competitions were as follows:—*The Lancet Cup*, open to members of the medical profession and given for the best scratch return against bogey: Winner, Mr. H. D. Gillies, 3 up. *Henry Morris Challenge Cup*, under handicap: Class A—1. Dr. C. E. Finny, 3 up; 2. Dr. J. A. Torrens, 2 up; last nine holes, Dr. Murray Thomson, 2 up. Class B—1. Dr. Eric W. Gandy, all square; 2. Sir Charles Ryall, one down; last nine holes, Dr. E. H. Shaw, 1 up. The Society will dine together at the Florence Restaurant, Rupert-street, London, on June 29th, and then discuss a proposed programme of inter-team matches. Members intending to be present should inform the hon. secretary, Dr. L. E. Creasy, 36, Weymouth-street, W.1.

Ladies' Medical Golfing Society: A most successful meeting was held on June 15th at Beaconsfield Golf Club. In the morning a medal round under handicap was played; the senior division prize was won by Miss Edith Adams after a tie, with a net score of 79, and the junior prize, presented by Mrs. W. F. Pedler, was won by Mrs. Alfred Eddowes, also after a tie, with a net score of 78. The Canny Ryall Challenge Cup for the best net return was won by Mrs. Arthur Moore with a score of 77. The prizes offered by Mrs. A. Currie for the best eclectic score sent in by a pair of competitors playing together, under half combined handicaps, were won by Mrs. de Paula and Mrs. Beatty Smyth. In the afternoon a foursomes versus bogey competition over ten holes resulted in a win for Mrs. T. Watts Eden and Dr. Joan Ross, who were one down. The success of the meeting was largely due to the efforts of the hon. secretary, Mrs. Laming Evans, to whom at the close of the meeting a hearty vote of thanks was accorded.

PROSPECTIVE CANDIDATE FOR THE SCOTTISH UNIVERSITIES.—At meetings of the Unionist Associations of the Scottish Universities held recently a letter was received from Sir Watson Cheyne, one of the members for the universities, stating that he had definitely decided not to seek re-election, and requested that a suitable prospective candidate should be selected without delay. In view of this letter Sir George Andreas Berry, LL.D., F.R.S.E., a former president of the Royal College of Surgeons, Edinburgh, and of the Ophthalmological Society of the United Kingdom, was invited to become prospective Unionist candidate, and he has agreed to place his services at the disposal of the constituency. Sir George Berry was educated at Marlborough and Edinburgh University, and also studied in London, Paris, Copenhagen, Vienna, and Giessen. He was from 1882 to 1905 ophthalmic surgeon, Edinburgh Royal Infirmary, where later he acted as one of the managers, and he has been for the past ten years a member of the University Court of the University of Edinburgh. During the war, and for one year after the war, he served as chief of the ophthalmic department of the Second General Hospital. He was knighted in 1916 in recognition of his scientific work.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee, held on June 14th, 27 cases were considered and £382 voted to 23 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 50, of M.R.C.S. who practised in Clevedon and died in 1917. On the death of her husband applicant resumed her profession as a nurse, but, unfortunately, her health gave way and she cannot work continuously. Her daughter, aged 20, is apprenticed to a photographer but is not able to keep herself. Applicant receives £50 interest on War Loan and her fees for nursing amounted to £20. Rent of flat £60. Voted £10 in two instalments.

Widow, aged 42, of M.B. Dublin who practised in Plymouth and died in 1915. Applicant had nervous breakdown two years ago and sold her furniture to pay expenses, and it is only within the last few months that she was well enough to try to support herself and children. She hopes to get a house so that she can take boarders. A friend promised to share the furnished flat she now has, but owing to this arrangement falling through she has to find the whole rent—£3 3s. per week. Applicant managed to let one of the rooms for the last three months at 30s. per week including meals. She receives £25 subscribed by medical men and invested with the Public Trustee, £30 from Devon and Exeter Medical Society, and £50 from a brother-in-law. Owing to insufficient means she has had to take her daughter away from her art studies, the two younger children are at home and the boy at Epsom. Applicant earned £15 by knitting jumpers. Voted £18 in two instalments.

Daughter, aged 67, of M.R.C.S.Eng. who practised in Portsmouth and died in 1878. Three daughters were left to support themselves; one died recently who helped with the house. Their sole income is derived from letting apartments. Applicant and her sister, owing to indifferent health, find the work very trying. Mortgage and rates amount to £53 per annum, and by letting they received £3 3s. per week, including part board for one. In 1910 and 1911 the Fund helped this case to the extent of £22. Voted £18 in 12 instalments and a special grant of £6.

Widow, aged 63, of L.R.F.P.S.Glasg. who practised at Paignton and afterwards as a ship's doctor. When the war broke out applicant's husband went as a surgeon on transports engaged by different shipping companies, and not coming directly under the Admiralty was not entitled to a pension. Applicant is an invalid. Her son allows her £4 per month; the youngest daughter is out as a cook but unable to help her mother financially. Voted £12 in 12 instalments.

Daughter, aged 70, of M.R.C.S.Eng. who practised at Durham and died in 1860. Applicant is asking help towards increased rent and rates. Owing to limited accommodation not more than four lodgers can be taken and the rent received from them amounts to £170. Applicant also receives £25 from the Governesses Benevolent Institution. The Fund helped a sister in 1915 to the extent of £5. Voted £18 in 12 instalments.

Widow, aged 45, of L.S.A. Lond. who died in 1921. After paying funeral expenses and debts out of the insurance of £100 applicant had so little left that she applied to the Public Trustee for an advance of £20 pending the settlement of her father-in-law's estate, which is expected to realise about £60 per annum. The eldest girl is a lady-help earning 14s. per week and board, the youngest is undergoing three months' training as a shorthand-typist, the fees being paid by a neighbour. Voted £10.

Daughter, aged 36, of L.R.C.S.Edin. who practised at Hastings. Applicant has supported herself by literary work, but owing to a nervous breakdown has been unable to carry on work and was dependent on friends. She came under the notice of the C.O.S., who applied to the Fund on her behalf. She was found very ill and near starvation. Another society sent her away for six weeks to regain strength and ask for a grant towards the cost. Voted £15.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, C.B., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

Dr. D. J. Galloway has been appointed an unofficial Member of the Legislative Council of the Straits Sett'ements.

HÔPITAL ST. ANTOINE, PARIS.—A week's course on diseases of the digestive system will be given by Drs. Bensaude, Félix Ramond, and Le Noir from July 11th to 18th, at 10 A.M. and 3 P.M. Practical demonstrations will be given each day after the discussions; those attending these demonstrations must register under Dr. Le Noir, Salle Arant. Fee for the course, 100 francs.

EAST AFRICAN CAMPAIGN DINNER.—A reunion dinner for all who took part in the East African Campaign will be held at the Holborn Restaurant on Friday, July 1st, when General Smuts will be the guest of the evening. Many who served in the R.A.M.C. in that campaign may be glad of this opportunity of meeting their late Commander-in-Chief on the occasion of his first visit to England as Prime Minister of the Union. Further particulars may be obtained from the Hon. Sec., 20, St. Thomas's Mansions, London, S.E.

IRISH MEDICAL ASSOCIATION.—The annual meeting of this Association was held on June 15th in the Royal College of Surgeons, Dublin, Dr. E. Magennis, the President, in the chair. The annual report of the Council stated that in the year 1920 the membership increased from 677 to 684. During the year the Treasury had agreed to the following remuneration for medical attendance on the Royal Irish Constabulary: (*a*) 2*s*. per head a month; (*b*) an addition of 6*d*. per head a month in respect of men stationed more than two miles from the doctor's house; (*c*) the rates to apply to the whole of Ireland from July 1st, 1920. The obligation to attend wives and children of constables has been abolished, and the new rates are therefore a substantial improvement on the old. It was noted that the Post Office had declined to increase the rate of remuneration (13*s*. a year) for attendance on postal servants. The Midwives Board for Ireland, as the result of the representations made by a deputation of the Council, had adopted an amended scale of fees for doctors summoned by midwives under the Midwives (Ireland) Act. The scale is as follows: (i.) Attendance at confinement in the day-time (8 o'clock, A.M., to 8 o'clock, P.M.) £2 2*s*. (ii.) Attendance at confinement in the night-time (8 o'clock, P.M., to 8 o'clock, A.M.) £3 3*s*., with the addition in each case of a mileage rate of 9*d*. for the portion of the outward and return journeys beyond three miles from the doctor's residence—no locomotion expenses to be allowed where the distance from the doctor's residence to the patient's house is under three miles. The annual statement of accounts shows a balance in hand of £165 19*s*. 6*d*., as against £581 3*s*. 10*d*. at the beginning of 1920. The President, in his address, alluded to the probability that the Association would be compelled to increase its subscription from one guinea perhaps to three. A discussion took place regarding the question of the fee paid for examination for life insurance. Representations had been made last year to the principal companies pointing out that the fee of one guinea was inadequate and demanding an increase. The companies, in view of their agreement with the British Medical Association that the fee should be one guinea, had declined to pay more. The Association passed a resolution asking the Irish Medical Committee to take steps to organise the profession of Dublin on the question.

THE P. & O. Steamship Company has subscribed £1000 per annum for three years to Lady Minto's Indian Nursing Association towards the cost of passages for nursing sisters.

ST. THOMAS'S HOSPITAL JUBILEE.—On June 21st the Jubilee of St. Thomas's Hospital was celebrated, the present buildings having been opened by Queen Victoria on June 21st, 1871. A jubilee appeal for £100,000 was made to clear the hospital of debt, and £2000 given or collected by the nursing staff was handed to the Duke of Connaught, President of the hospital, who presented the prizes to students of the medical school.

COMMITTEE ON INTERNATIONAL HYGIENE.—Following a suggestion of the Washington Conference to appoint an advisory committee of experts on industrial hygiene, the International Labour Office has invited the Governments of Belgium, France, Germany, Great Britain, Italy, Japan, the Netherlands, Spain, Sweden, and Switzerland each to nominate as a member of this advisory committee one of their health inspectors or factory inspectors.

THE CHILDREN'S COUNTRY HOLIDAYS FUND.—Mr. Percy Simmons, chairman of the London County Council, has issued an appeal on behalf of the above Fund. "For many years," he says, "by means of the Fund, a large number of the children attending the London elementary schools have been enabled to obtain a fortnight's holiday in the country, and this has been of the greatest value to them in every way. The position this year is particularly difficult owing to lack of funds and the increase in railway fares, while unemployment and short work make it impossible for the parents to contribute as much as they have done in past years." Cheques, &c., should be made payable to the Children's Country Holidays Fund, and should be sent direct to the Secretary at 18, Buckingham-street, London, W.C. 2.

DONATIONS AND BEQUESTS.—The late Sir Felix Semon, K.C.V.O., M.D., F.R.C.P., bequeathed the whole of his laryngological library, except copies of his own writings, to the Royal Society of Medicine.—By will the late Mr. Daniel de Pass, of Old Court Mansions, Kensington, and Worthing, left £1000 each to the London Hospital, Dr. Barnardo's Homes, and the London Jewish Hospital, Stepney Green; £500 to the Beth Holim Hospital; and £100 each to St. Mary's Hospital, Paddington, the Jewish Deaf and Dumb Society, and the Worthing Hospital.—The late Mr. John Butt, of the Barnlands, Littlehampton, bequeathed £1000 to the Littlehampton and District Hospital; £300 to the Royal West Sussex Hospital, Chichester; £200 each to the Sussex Eye Hospital, the Sussex County Hospital, Brighton; and £100 to the Littlehampton Parish Nurses' Fund.—By will Mr. William Henry Fox, B.A., of Bradwell-grove, near Burford, left £1000 to the Burford Cottage Hospital and £2500 to the Radcliffe Infirmary.

Obituary.

WILLIAM ABRAHAM BELL, M.B. CAMB.

Dr. W. A. Bell, whose death at advanced age was recently announced, was born in April, 1841, the only son of Dr. William Bell, a well-known homœopath, of Hertford-street, London. Educated at Ipswich Grammar School and at Trinity Hall, Cambridge, he took a first class in the Natural Science Tripos, and in 1866 graduated in medicine. On his after career we have received the following interesting note from Dr. Robert Lee, who preceded him as a student by one year at St. George's Hospital. Dr. Lee writes: "As father and son could not agree on the question of medical practice, it was arranged that the son should go out to America to study. There he joined an important expedition to San Francisco, and after two years settled at Pike's Peak, Colorado, retiring from professional work. He became chief agent for development in Europe of interests in the American Railway and the lands that came under its control, and his house in Colorado was well known to Kingsley, Flower, and other scientific men who went out from our universities to explore the Western States."

Dr. Bell married in 1872 Clara Georgina Whitmore, daughter and co-heir of Whitmore Scovell, of Waddon, Surrey, by whom he had one son and three daughters.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance Bill.

Sir A. MOND, Minister of Health, has introduced in the House of Commons the National Health Insurance Bill. Clauses 1 and 2 of the measure are based on the recommendations of the recent Departmental Committee on Approved Societies' Administration Allowance. No change is made in the rates of contribution or normal rates of benefit under the National Health Insurance Acts, but in order to enable the administration allowance for approved societies to be increased from 4*s.* 5*d.* to 4*s.* 10*d.* per member per annum the Bill proposes to make a small reduction in the amount retained out of each weekly contribution for the purposes of the Contingencies Fund, thus leaving a greater amount in the general funds of the societies out of which the administration allowance is provided. The proportion of two-ninths of the cost of benefits and administration to be provided by the Exchequer remains unaltered. The Exchequer is enabled to reduce or suspend its contribution of £150,000 a year to the Central Fund *pari passu* with the contribution thereto from the Societies Contingencies Funds. Clause 2 provides for the contribution from the funds of approved societies towards the administration expenses of insurance committees being increased by twopence per member per annum with a corresponding relief to the Exchequer. Clause 3 enables a reduction to be made in the membership of insurance committees in England and Wales with a consequent saving in the administration expenses of the committees while retaining so far as practicable the present proportions between the several classes of persons to be appointed. The net saving to the Exchequer under the Bill will, it is stated in the memorandum, be about £300,000 a year as from Jan. 1st last.

HOUSE OF LORDS.

THURSDAY, JUNE 16TH.

The Dentists Bill.

The Earl of ONSLOW, in moving the second reading of the Dentists Bill, explained the provisions of the measure, and said that it made no charge on the Exchequer. The expenditure would be defrayed from fees, and if there was any surplus it would be spent on dental education and research. There was only one point of substance about which there was any difference, and that was in regard to the form of the register. The admission of the unqualified practitioner had been regarded with some misgiving by Sir Frank Colyer, and a different form of register had been suggested. The matter had been discussed at considerable length and Sir Frank Colyer's points had been answered by the Chairman of the Departmental Committee, Mr. Acland. The Government supported the view of the Committee. The British Dental Association had forwarded to the Ministry of Health a memorial extensively signed by dental practitioners in favour of the Bill.

Lord GREVILLE said he did not wish their lordships to think that this was altogether an agreed Bill. There was, in fact, considerable opposition to a certain part of the measure, and on behalf of the Ivory Cross Society, of which he was at present the Chairman, he should have something to say in the Committee stage. There was no opposition to the Bill as a Bill by dental practitioners or the Society. It was, in fact, welcomed by dental practitioners and by his organisation, but there were certain features of it to which they strongly objected, principally in regard to the wholesale admittance of the unqualified practitioner.

The Marquess of SALISBURY said there was certainly an element in the Bill which would have to be carefully scrutinised in Committee. They were all in favour of the Bill and of protection for the dental profession, but there were not enough dentists to supply the population, and it was evidently proper that they should do all in their power to make the profession as attractive as possible. In order to arrive at an agreement the Committee seemed to have been led as a *quid pro quo* to the unqualified practitioners to admit the existing ones *en bloc* as fully qualified dentists. That might be good tactics from a Parliamentary point of view, but it was extremely bad from the point of view of the people who suffered from toothache, and they would have to consider closely whether they were going to allow a number of practitioners, some of whom were little better than charlatans, to be admitted by a stroke of the pen to the full advantages, privileges, and dignities of dentists in order to facilitate the passage of the Bill. There might be an answer, and if it was a good one, of course they would bow to it, but as at present advised he thought the Government should carefully consider whether a change in the Bill in this respect ought not to be made.

Viscount KNUTSFORD, a member of the Departmental Committee, said there was no suggestion that all unregistered men should be admitted *en bloc* to the register. On the contrary, they limited the admission of them to those men who had been in good practice for five years and could bring evidence of good character in that practice. Those men who had not been five years in practice, but who would submit themselves to a qualifying examination were also to be admitted. They had all received letters and circulars from a certain number of gentlemen, more noisy than wise, who wished to keep out all the unqualified men from the register. By far the greater part of the dental work in this country was done now by these unregistered men, and it would be a monstrous thing to prevent them carrying on their practice altogether. Moreover, the dental work of the country could not be done unless they were allowed to practise. It had been suggested that a special list of these men might be made. A much better plan would be that the Dental Register should show the qualifications of the dentist opposite his name, and that those who were unregistered, or were on the register without qualification, should have that fact shown opposite their names, in brackets. He ventured to think, however, that not a single member of that House had ever looked at a register to see what degrees his dentists had obtained; it mattered very little. But the fact of a dentist being on the register meant that he was obliged to obey the ethics of the profession; he was not allowed to canvass or advertise for work. The register, therefore, was not only a privilege, it was a controlling influence. Unless the Bill passed a good many men would not join the dental profession. Why should a father allow his son to join that profession when he knew that the butcher, the baker, or the candlestick maker might take a house next door and practise equally with him?

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 15TH.

Pre-war Disability Pensions.

Viscountess ASTOR asked the Financial Secretary to the Admiralty what conclusions had been reached with regard to increases in the pre-war disability pensions of men who served again in the war.—Mr. AMERY replied: It has been decided that the claims of pre-war disability pensioners who served during the war and were demobilised are to be dealt with under the post-war scales of pension. It is anticipated that the scales will shortly be promulgated, the final details being now in course of settlement.

Disabled Men and Unemployment Contributions.

Mr. ROBERT YOUNG asked the Minister of Labour whether an ex-Service man totally disabled was entitled to any refund of contributions paid by him into the funds governing unemployment under the National Insurance Acts.—Dr. MACNAMARA replied: An ex-Service man totally disabled is not entitled on the ground only that he is totally disabled to any refund of employment contributions correctly paid under the National Insurance Acts. The only provision for a refund to an insured contributor of contributions correctly paid is contained in Section 25 of the Act of 1920, under which a contributor may obtain a refund upon reaching the age of 60, provided that certain conditions are satisfied A person who is in receipt of a pension of £26 or upwards, is, however, entitled under Section 3 of the Act to exemption from liability to be insured. This would relieve him, but not his employer, from payment of contributions.

Unemployment Benefit and Treatment Allowances.

Mr. TYSON WILSON asked the Minister of Labour if he was aware that, when an ex-Service man who was or had been in receipt of treatment allowance was certified by the medical referee as fit for employment, his treatment allowance ceased immediately; that if he had no employment to go to he cannot make application for unemployment benefit for at least seven days after the receipt of the last treatment allowance; and that this meant that these men were sometimes without any income for two or even three weeks; and whether he could, by regulation or otherwise, make arrangements whereby unemployment benefit could be paid them seven days after the stoppage of treatment allowance.—Dr. MACNAMARA replied: A claimant for unemployment benefit must, amongst other things, be capable of and available for work. Accordingly, an ex-Service man who has been in receipt of full treatment allowance on the ground that he was incapable of work, would not be in a position to claim benefit during the period covered by the treatment allowance. Treatment allowances are paid in advance up to Tuesdays; unemployment benefit, which is necessarily due only after proof of unemployment has been given, is paid on Fridays in respect of weeks ending Wednesdays. Accordingly there is a period of 16 days between the last day on which treatment allowance is actually paid and the first

day on which benefit is received. The first seven of these days will be covered by the last payment of treatment allowance paid in advance. I may further point out that this class of man is almost invariably entitled to a pension and that payment of pension in advance, which is, of course, suspended during full treatment allowance, is, or ought to be, resumed immediately on cessation of treatment allowance.

Polluted State of the River Lee.

Major MALONE asked the Minister of Health whether he would have inquiry made by his department into the polluted and offensive state of the River Lee; whether he was aware that complaints had frequently been made to the local authorities by the inhabitants and persons using the river, and that, as late as last week, the medical officer of health for Tottenham reported to his committee that objectionable matter consisting of decomposing organic material and an oily substance entered the River Lee below the Tottenham lock, causing that reach of water to be highly polluted and offensive, and would he exercise such pressure on the Lee Conservancy Board as to compel that authority to purify the river in the interest of the health of the inhabitants and the users of the river.—Sir ALFRED MOND replied: The Lee Conservancy Board are by virtue of Section 9 of the Rivers Pollution Prevention Act, 1876, the authority for enforcing the provisions of that Act and of the Lee Conservancy Act, 1868, with regard to the River Lee, and I have no power to compel the Board to take action in the matter. I have no information as to the complaints referred to in the second part of the question.—Major MALONE: In the interests of the health of the district and in view of the complaints that have been made has not the right honourable gentleman power to compel the Board to carry out this work?—Sir ALFRED MOND: No, Sir, I have not.

Remuneration of Bramley Vaccination Officer.

Mr. ROBERT RICHARDSON asked the Minister of Health whether his attention had been directed to the case of Mr. Arthur Gaunt, vaccination officer of the Bramley Union, and the definite attempt of the Bramley guardians to deprive an official of 20 years' service of his living by taking away the bonus entirely, leaving this officer the sum of £25 9*s.* 7*d.* per quarter as his only source of income to maintain a wife and two children; and whether, under the circumstances, this was a case in which he would exercise his right of determining the amount of remuneration to be paid by the Bramley guardians.—Sir ALFRED MOND replied: I understand that the facts are as stated in the first part of the question except that as the officer in question is only a part-time officer, I am not able to say whether he has any other source of income. After full consideration of the circumstances of this case, I do not see my way to interfere with the decision of the guardians in a matter affecting the salaries of their officers.

The Criminal Law Amendment Bill.

Viscountess ASTOR asked the Lord Privy Seal whether he had received copies of two resolutions passed at a meeting held in the House of Commons in support of the Bishop of London's Criminal Law Amendment Bill, at which practically every organisation interested was represented, promising to abstain from introducing controversial amendments; and whether, under these circumstances, he would undertake to give facilities for the passage of the Bill this session.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. I cannot, however, at present add anything to the answer which I gave my honourable friend on April 12th last.—Viscountess ASTOR: Since that answer we have had a meeting, and as this is not a controversial question could not the right honourable gentleman really see his way to make time for it as it will cost the country nothing? It is one of those Bills which the Government could get through. It would do a great deal of good, and I would urge the right honourable gentleman to find time for it.—Mr. CHAMBERLAIN: I quite understand the importance attached to this measure by a very large section of public opinion, and I am anxious that it should be considered by the House this session, but I cannot make a pledge to find time for it at this stage, though I hope it may be possible to do so later.—Major C. LOWTHER: Is the right honourable gentleman aware that this Bill would be by no means uncontroversial and that it is likely to lead to considerable controversy?—Viscountess ASTOR: Only by a certain section.

Old Age Pensioners in Poor-law Infirmaries.

Mr. NEVILLE CHAMBERLAIN asked the Minister of Health, whether an old age pensioner ceased to be entitled to receive his pension on entering a Poor-law infirmary on the ground that the cost of his maintenance was borne by the institution so long as he was an inmate; and, if so, on what ground the pension was stopped in cases where the cost of maintenance was borne by relatives or friends of the pensioner.—Commander HILTON YOUNG (Financial Secretary to the Treasury) replied: In the former case Section 3 (1) of the Old Age Pensions Act, 1919, provides that an old age pensioner shall not be disqualified for the receipt of a pension during a period of three months from the date of entering an infirmary if he so long continues to require medical or surgical treatment. After that period he incurs disqualification. In the latter case the pensioner ceases to be entitled to a pension so soon as his means, which include the cost of maintenance borne by relatives or friends, exceed the statutory limit of £49 17*s.* 6*d.* per annum.

Pensions (Ill-health) Claims.

Sir ROBERT CLOUGH asked the Minister of Pensions whether claims were admitted on the part of soldiers who did not, on demobilisation, make complaint of ill-health, either because they did not themselves then recognise the gravity of the symptoms or because there were actually at the time no specific symptoms of the disease whose origin arose from the war, but which only developed subsequently.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: The answer is in the affirmative.

Medical Referee and ex-Soldier's Claim.

Lieut.-Colonel HURST asked the Minister of Pensions whether he was aware that the Appeal Board had refused to revise the case of F. J. Taylor, 55, Jenkinson-street, Manchester, and had maintained a 20 per cent. assessment; whether this refusal was in harmony with the report of the medical referee; whether he was aware that this ex-soldier still had a bullet lying immediately to the left of his heart; and if he would have the case inquired into.—Mr. MACPHERSON replied: I am having inquiries made in this case, and hope to communicate with my hon. and gallant friend in a few days.

Lunacy Act Regulations.

Colonel WEDGWOOD asked the Minister of Health how soon he proposed to have posted up in the waiting-rooms of public asylums the provisions of Section 79 of the Lunacy Act, 1890, which had hitherto been hidden from the friends and relatives of patients.—Sir ALFRED MOND replied: The Board of Control have notified all visiting committees that they propose to make a rule requiring the inclusion of the substance of this Section in the "Regulations as to Visitation" furnished by all asylums to the friends of patients. There is, however, no foundation for the suggestion contained in the last part of the question.

Certification of "Voluntary Boarders."

Colonel WEDGWOOD asked the Minister of Health whether the Lunacy Board of Control had recently issued a regulation putting a stop to the certification of voluntary boarders while inmates of licensed houses or registered hospitals; and, in view of the fact that no procedure for certification had been prescribed by the Lunacy Act of 1890 applicable to the circumstances of such boarders, would he say what had been the nature of the steps required to be taken under Section 20 of the Act of 1891, when certification had hitherto been directed by the Board.—Sir ALFRED MOND replied: The hon. and gallant Member is under a misapprehension and no such regulation has been issued. No steps have been taken by the Board and none are needed to give effect to Section 20 of the Lunacy Act, 1891. The methods of certification are laid down in the Acts.

Medical Officers and Examination of ex-Service Men.

Mr. ALFRED T. DAVIES asked the Minister of Pensions what proportion of medical men whose services were used in examining ex-Service men had had experience overseas during the war; and whether he would consider the desirability of the employment of a larger number of such medical men in the interests of those so examined from time to time.—Major TRYON replied: Approximately 60 per cent. of the medical officers employed by my department in the examination of ex-Service men have served overseas. It is the practice of the Ministry, other things being equal, to give preference to medical men possessing the qualification to which my hon. friend refers.

THURSDAY, JUNE 16TH.

Permits for Bellahouston Hospital.

Mr. NEIL MACLEAN asked the Minister of Pensions whether, although permits to enter Bellahouston Hospital and interview cases had been granted to the British Legion, the Association for the Limbless, and the New Advisory Committee by the Scottish Regional Director, a permit for a similar purpose had been refused to the representative of the International Union of Ex-Service Men; what was the reason for this refusal; and whether he would issue instructions that equal facilities given to other ex-Service men's organisations would also be granted to the International Union of Ex-Service Men.—Mr. MACPHERSON replied: The hon. Member appears to have been misinformed. No such permits have been issued to any of the bodies mentioned, and the remainder of the question, therefore, does not arise.

Pensions Administration in Glasgow Area.

Mr. NEIL MACLEAN asked the Minister of Pensions whether he was aware of the public dissatisfaction in Glasgow in the administration of the war pensions in the Glasgow area; that there was a feeling that the regional officers were giving rulings which were at variance with the decision of the local war pensions committee, and that the local war pensions committee resigned because of the difficulties created by these rulings; and whether he was prepared to have a full inquiry into the administration of the war pensions committee for the Glasgow area.—Mr. MACPHERSON replied: The answer to all parts of this question is in the negative.

Local War Pensions Administration.

Mr. LAWSON asked the Minister of Pensions, whether it was the policy of the Ministry to transfer the powers of local pension committees to the areas, so that the work carried out by these committees would in a short time be undertaken by permanent officials of the Ministry.—Mr. MACPHERSON replied: My hon. friend may remember that the working of the local committee system was specifically included in the terms of reference to the Departmental Committee of Inquiry which I appointed last November. Until the report of that Committee is in my hands I do not propose to make any statement.

Appointments of Medical Referees.

Mr. JOHN GUEST asked the Minister of Pensions (1) whether, seeing that the original appointments of medical referees were made before the completion of medical demobilisation, these appointments would now again be declared vacant and re-advertised, or whether the original appointments were the fixed and permanent appointments of the present holders; (2) whether the appointment of medical referees were now reviewed every six months as originally decided; how many of these appointments had been considered vacant on review and changed; and whether the opinion of the local pensions committee was ever asked or considered in these appointments.—Mr. MACPHERSON replied: In the latter part of 1919, when the demobilisation of medical men was practically complete, the then existing appointments of medical referees, to the number of 962, were declared vacant, and 1553 new appointments were made, preference being given to those men who had served overseas during the war. All the present appointments are temporary, being subject to one month's notice on either side. While the paramount consideration in making these appointments must be medical, consideration is always given to representation made by local committees.

Cost of Medical Referees.

Mr. GUEST asked the Minister of Pensions what was the total number of medical referees employed locally and centrally on pensions work; what was the total cost to the country; what fees were now paid for this work; what was the average per claimant pensioner; and whether all the appointments were part-time.—Mr. MACPHERSON replied: The Ministry utilises the services of 1717 medical referees, whose appointments are part-time and subject to a month's notice. Payment is made at the rate of 5*s.* per case except where the examination is in connexion with a claim to alternative pension, when the fee is 10*s.* 6*d.* The amount paid in fees to medical referees during the last financial year was approximately £250,000.—Sir W. PEARCE: Is there a transfer of duties formerly performed by war pensions committees to the medical referees?—Mr. MACPHERSON: I do not think so. They deal purely with the medical aspect of a case and the local pension committees deal mainly with the facts.

Medical View of School Camps.

Mr. TREVELYAN THOMSON asked the President of the Board of Education whether, notwithstanding the recommendations of the chief medical officer that school camps should be encouraged, local education authorities were handicapped in making such arrangements under Section 17 of the Education Act of 1918, owing to the rulings of his Board that attendance at lessons given in camps could not be reckoned on the register of attendances if any charge was made; and, if the Act of 1918 prohibited such charges, would he bring in an amending Bill to enable local education authorities to organise school camps for which a charge was made and where attendance at lessons might be counted on the school register.—Mr. HERBERT LEWIS replied: On the general question of principle I can only refer the hon. Member to the answer which was given to him on April 26th. I do not consider that local education authorities are handicapped, and I am not prepared to introduce legislation for the purpose suggested.

Death-rate among Miners.

Mr. ROBERT MCLAREN asked the Secretary for Mines whether his attention had been called to the report published by the Chief Inspector of Mines, and could he explain why the death-rate per 1000 persons employed in 1920 was 0·88 and in 1914 1·08, whereas the amount of mineral produced per death was 217,259 tons and 228,947 tons for 1920 and 1914 respectively; and whether, in the opinion of the department, the mines were safer now than in 1914.—Mr. BRIDGEMAN replied: The explanation of the phenomenon that while the death-rate per person employed has fallen the death-rate per mineral produced has risen is, of course, that the fall in the death-rate is not proportionate to the fall in output. As regards the last part of the question, my hon. friend is aware that it is the constant endeavour of my department to bring about greater safety in mining, but it is obvious that progress cannot be tested by a comparison of the figures of two isolated years.

Ex-Service Men and Lunacy Regulations.

Mr. FREDERICK ROBERTS asked the Minister of Health whether, when an ex-Service man had been committed to an asylum on account of mental injury attributable to the war the man himself and his next-of-kin were informed that one of the privileges attached to his having been placed on a private patient footing was that, provided that he could not be proved to be dangerous and unfit to be at large, his next-of-kin had the right, in accordance with Sections 72 to 74 of the Lunacy Act, to direct his discharge.—Sir ALFRED MOND replied: It is not desirable to furnish this information on admission, but when a service patient is sufficiently recovered to raise the question of his discharge he is informed of the legal position and of the steps to be taken by his relatives.

Insured Man and Sanatorium Treatment.

Mr. GRUNDY asked the Minister of Health if he was aware that Frederick Shoesmith, of 9, Cator-street, S.E. 15, had been an inmate of Camberwell Infirmary for several months, that he was an insured person, and as such had been recommended for sanatorium treatment; and what steps he proposed to take to obtain the benefit expected by this man.—Sir ALFRED MOND replied: I understand that an application for sanatorium benefit was received by the London Insurance Committee on April 12th last from this man, who was at the time an inmate of the Camberwell Infirmary; that the case is one of advanced tuberculosis, and that Mr. Shoesmith was not therefore recommended for treatment in a sanatorium. I am informed, however, that the case may be suitable for admission to a hospital for the treatment of advanced cases of this disease. Consequent upon the termination of sanatorium benefit on April 30th last the Insurance Committee ceased on that date to provide institutional treatment for tuberculosis, and the question of the provision of such treatment is now a matter for the London County Council. There is considerable pressure upon the available accommodation for the treatment of advanced cases of tuberculosis in London at the present time, but I will communicate with the County Council with regard to this case.

MONDAY, JUNE 20TH.

Death Sentence for Infant Murder.

Mr. HENRY MCLAREN asked the Secretary for the Home Department whether he had received representations in reference to the sentence passed on a girl named Roberts convicted of the murder of her infant child at Hinckley; and whether, in view of the feeling aroused by the passing of the death sentence in such cases, he could see his way to introduce into the House of Commons a Bill giving discretionary powers to the judge to pass a sentence other than death.—Mr. SHORTT replied: The answer to the first part of the question is in the affirmative. I will send the honourable Member a draft of a Bill dealing with this matter which was agreed to by the Lord Chancellor, the Lord Chief Justice, and the Attorney-General in 1910. If a Bill on those lines were introduced and proved to be uncontroversial, I think it might be passed.

The Sinking of Hospital Ships.

Mr. BOTTOMLEY asked the Prime Minister whether any person connected with the German submarine naval command was to be brought to trial for the issue of orders to submarine commanders to sink hospital ships; and, if not, was the British Government a party to this arrangement.—Sir G. HEWART (Attorney-General) replied: As already stated the trials which have taken place and are to take place immediately are of cases upon the Allies' preliminary list. It is not in the interest of further proceedings to reply specifically to the first part of the question. No such arrangement as suggested has been entered into.

Medical Insurance Benefits.

Mr. LEONARD LYLE asked the Minister of Health if he had any statistics showing the number of insured under the National Health Insurance Act who were already in arrears with the maximum total of unpaid subscriptions which, unless met before October, would debar them from

medical benefits in 1922.—Sir A. MOND replied: All insured persons remain entitled to medical benefit so long as they continue in insurance and there is no suspension of the benefit on account of arrears of contributions.

TUESDAY, JUNE 21ST.

Washington Maternity Convention.

Major HILLS asked the Prime Minister whether the Government was prepared to submit a resolution embodying the hours of labour convention and the maternity convention to the House of Commons before July 27th, in view of the fact that, on that day, expired the time limit allowed under Article 405 in which to bring conventions before the competent authority for the enactment of legislation.—Mr. CHAMBERLAIN (Lord Privy Seal) replied: For details as to the constitutional issues involved, I would refer my honourable and gallant friend to the speech made by my right honourable friend the Attorney-General during the debate on Friday, May 27th. We are anxious, however, to give the House the fullest possible opportunity for discussion on these conventions. Such an opportunity was afforded during the recent debate, and, as I explained on Tuesday last, there will be a further opportunity for discussion so soon as the pressure of other business permits.

Milk Deficient in Fat.

Mr. HURD asked the Minister of Agriculture whether, in view of recent proceedings, he would consult the Minister of Health as to the issue of a circular letter to local authorities informing them that the basis of prosecutions for supplying milk deficient in fat should be not one or two tests made in exceptional circumstances but a series of tests, so that while detecting adulteration the farmer or dairyman might not be penalised for faults for which neither could be held responsible.—Sir A. BOSCAWEN replied: I am examining into such cases as my honourable friend has put before me of the prosecution of dairymen in respect of the sale of milk of poor quality. As I stated in my reply on June 16th, I shall be prepared, if the body of evidence warrants it, to consult with my right honourable friend the Minister of Health with a view to the issue of a circular letter to local authorities.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. E. P. Hewitt retires on ret. pay.

Capt. T. K. Boney relinquishes the actg. rank of Maj.

Capt. H. G. Winter, M.C., relinquishes the actg. rank of Maj.

Temp. Capt. A. C. Profeit relinquishes his commn. and is granted the rank of Maj.

R. W. Harper, late temp. Capt., to be temp. Capt.

ARMY DENTAL CORPS.

Temp. Maj. J. G. Worsley, Dental Surg., from Spec. List, to be Maj.

Temp. Capt. A. V. Milnes, Dental Surg., from Gen. List, to be Capt.

SPECIAL RESERVE OF OFFICERS.

Capt. D. Clyde relinquishes his commn. on appt. to a permanent commn. in the Ind. Med. Service.

Capt. R. Magill relinquishes the actg. rank of Maj.

TERRITORIAL FORCE.

Lt.-Col. (Bt. Col.) T. H. Haydon resigns his commn. and retains his rank.

Maj. J. A. Kendall resigns his commn. and retains the rank of Maj.

Maj. T. Martin (late R.A.M.C.) to be Capt. and relinquishes the rank of Maj.

Capt. J. W. Kemp to be Maj.

Capt. H. E. S. Richards is secd. for service under the Colonial Office.

A. H. Crook (late Surgn. Lt., R.N.V.R.) to be Capt.

Capt. D. C. Graham (late R.A.M.C.) to be Lt. and relinquishes the rank of Capt.

Lt. L. H. Taylor to be Capt.

2nd Lond. Sanitary Co.—Lt. S. H. Kemp resigns his commn. and retains the rank of Lt.

DEFENCE FORCE.

To be temp. Majs.: Temp. Capt. O. Teichman (whilst specially empld.) and J. C. S. Burkitt.

Temp. Capt. R. M. Wilson relinquishes his commn.

To be temp. Capts.: A. H. Fullerton and M. H. Barton.

1st (Home Counties) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: E. A. Houchin.

2nd (Home Counties) Fd. Amb. (D.F.).—G. A. Blake (Capt. (Bt. Maj.), R.A.M.C.) is granted the rank of temp. Lt.-Col. while comdg. a Fd. Amb.

1st (E. Lancs.) Fd. Amb. (D.F.).—R. MacKinnon (Capt., R.A.M.C., Spec. Res.) is granted the rank of temp. Maj.

1st (N. Midland) Fd. Amb. (D.F.).—A. E. Milner (Maj. is granted the rank of temp. Lt.-Col. while comdg. a Fd. Amb.

2nd (N. Midland) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: G. B. Gill. To be temp. Maj.: T. C. Clare. To be temp. Capts.: G. R. Jackson and J. Donald. To be temp. Lt.: T. N. C. Atkinson.

3rd (N. Midland) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: J. Miller. To be temp. Maj.: G. F. Haycraft. To be temp. Capts.: R. B. Lilly and W. W. Hallchurch.

2nd (E. Ang.) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: S. J. Fielding.

3rd (E. Ang.) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: C. S. Wink.

2nd (S. Midland) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: R. A. Broderick. To be temp. Capts.: L. G. Parsons and H. W. Featherstone.

The undermentioned relinquish their commissions: Temp. Lt.-Col. R. A. Broderick. Temp. Capts. L. G. Parsons and H. W. Featherstone.

INDIAN MEDICAL SERVICE.

The King has approved the relinquishment of their commissions by the undermentioned:—

Temp. Capts. Gorur Srinivasmurti, Shyam Behari Lal, Vinayak Laxman Sathe, Armand Marcus Duarte, Christian John Prabhakar, Ram Lal Bhumbhwal, Vasadeo Bhanrao Gupte.

ROYAL AIR FORCE.

Squadron Leader H. B. Porteous is seconded for duty with the South African Air Force.

THE WAZIRISTAN OPERATIONS.

The following names appear in a long list of awards for services during the Waziristan Operations:—

Companion of the Star of India: Col. C. W. Profeit, C.M.G., D.S.O., A.M.S. (mentioned in despatches).

Companion of the Indian Empire: Col. T. Stodart, I.M.S., and Lt.-Col. (actg. Col.) C. Hudson, D.S.O., I.M.S. (mentioned in despatches).

Officer of the British Empire: Capt. (actg. Lt.-Col.) A. G. Biggam, R.A.M.C. (mentioned in despatches); Maj. T. C. C. Leslie, R.A.M.C. (mentioned in despatches); Capt. and Bt.-Maj. (temp. Maj.) J. A. Sinton, V.C. I.M.S. (mentioned in despatches); and Maj. G. S Wallace, R.A.M.C.

To be Brevet Lt.-Col.: Maj. T. S. Dudding, O.B.E., R.A.M.C.

Bar to Military Cross: Capt. W. J. S. Ingram M.C., I.M.S.

Military Cross: Temp. Capt. Banwari Lall Gupta, I.M.S.; Temp. Capt. Kishan Ganesh Mohile, I.M.S.; Capt. (actg. Maj.) D. Reynolds, R.A.M.C.

Mentioned in Despatches: Maj. (actg. Lt.-Col.) J. Anderson, I.M.S.; Maj. D. Coutts, I.M.S.; Capt. Radha Krishna Dewan, I.M.S., T.C.; Maj. C. H. Fielding, I.M.S.; Capt. (actg. Maj.) R. E. Flowerdew, I.M.S.; Capt. C. C. Harrison, R.A.M.C., S.R.; Capt. Enathickal John Koshi, I.M.S., T.C.; Capt. (temp. Maj.) H. H. Mulholland, R.A.M.C.; Capt. (actg. Lt.-Col.) D. F. Murphy, I.M.S.; Lt. Attamahomed Tajmahomed Shaikh, I.M.S., T.C.; Capt. (actg. Lt.-Col.) C. H. Smith, O.B.E., I.M.S.; Capt. R. R. Thompson, M.C., R.A.M.C.; Capt. (actg. Maj.) Jagannath Balkrishna Vaidya I.M.S.; Capt. (actg. Lt.-Col.) J. P. Huban I.M.S.; Temp. Capt. Nitya Nand Joshi, I.M.S.; Maj. (temp. Lt.-Col.) N. M. Wilson, I.M.S.; Maj. (actg. Lt.-Col.) H. B. Scott, I.M.S.; Maj. (actg. Lt.-Col.) F. B. Shettle, I.M.S.; and Dr. Alice Pennel, Afghan Mission Hospital, Bannu.

The King has granted permission to Dr. Kenneth Edward Eckenstein to wear the Cross of Chevalier of the Legion of Honour and the Cross of Chevalier of the Order of the Crown respectively conferred upon him by the President of the French Republic and the King of the Belgians, in recognition of his services during the late war as medical officer in the French Army.

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Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, June 30th.—Papers:—Sir J. J. Dobbie and Dr. J. J. Fox: The Absorption of Light by Elements in a State of Vapour; The Halogens. Prof. W. A. Bone and the late Mr. W. A. Haward: Gaseous Combustion at High Pressures. Part II., The Explosion of Hydrogen-Air and Carbon-Monoxide-Air Mixtures. Prof. A. E. H. Love and Mr. F. B. Pidduck: Lagrange's Ballistic Problem. Mr. J. Proudman: The Principles of Internal Ballistics (communicated by Prof. H. Lamb). Mr. R. H. Fowler: A Simple Extension of Fourier's Integral Theorem and some Physical Applications in particular to the Theory of Quanta (communicated by Sir Ernest Rutherford). Capt. D. Brunt: The Dynamics of Revolving Fluid on a Rotating Earth (communicated by Sir Napier Shaw). And other papers. The following papers will be read in title:—Takeo Shimizu: A Preliminary Note on Branched α Ray Tracks (communicated by Sir E. Rutherford.) Takeo Shimizu: A Reciprocating Expansion Apparatus for Detecting Ionising Rays (communicated by Mr. C. T. R. Wilson). Mr. R. W. Wood: The Time Interval between Absorption and Emission of Light in Fluorescence.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MEETING OF SECTION.
Monday, June 27th.

SECTION OF ODONTOLOGY: at 8 P.M.
Paper:—Mr. Kelsey Fry: The Dental Treatment of Congenital and other Perforations of the Palate.

RESEARCH DEFENCE SOCIETY: at the House of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.
WEDNESDAY, June 29th.—3.30 P.M., Annual General Meeting. Short Address:—Dr. H. H. Dale: Work of the National Institute for Medical Research. Specimens will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, June 27th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Mr. Baldwin: Demonstration of Cases (Surgical Wards). Mr. MacDonald: Surgical Out-Patients. Dr. Morton: X Ray Department. 5 P.M., Lecture:—Mr. D. Armour: Diseases of the Gall-bladder and Ducts: Treatment.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 2 P.M., Dr. Burnford: Medical Out-Patients. Dr. Pernet: Skin Department. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Simson: Abortion.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. 5 P.M., Lecture:—Mr. Baldwin: Surgery of the Rectum.
THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. B. Harman: Eye Department. 2.30 P.M., Dr. Arthur Saunders: Demonstration of Cases (Medical Wards). 5 P.M., Special Lecture:—Sir Thomas Horder: The Investigation and Immediate Treatment of a Case of Acute Pyogenic Infection (open to all medical practitioners).
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visits to Wards. Dr. G. Stewart: Neurological Demonstration. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose and Ear. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 5 P.M., Lecture:—Mr. T. Gray: The Surgical Physiology of the Alimentary Tract.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.
Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON) Turner-street, Mile End E.
Courses of Lectures:—
Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.
A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.
THURSDAY, June 30th.—4.30 P.M., Lecture VIII.
SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post-graduates and Senior Students.
TUESDAY, June 28th.—4.15 P.M., Mr. H. Lett: Stricture of the Urethra.
THURSDAY.—4.15 P.M., Mr. H. Lett: Retention of Urine.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, June 30th.—4 P.M., Lecture:—Dr. Poynton: Pericarditis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, June 27th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. J. B. Banister: Gynæcological.
TUESDAY.—9.45 A.M., Lt. Col. R. H. Elliot; Eye Operations and Cases. 2.30 P.M., Dr. J. Metcalfe: X Ray Department. 3 P.M., Lecture Demonstration:—Mr. C. H. Hayton: Anatomy of the Pharynx and Larynx, with Methods of Examination.
WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Dermatological. 3 P.M., Lecture Demonstration:—Mr. W. E. Tanner: Some Cases of Acute Bone Disease.
THURSDAY.—2 P.M., Mr. N. Fleming: Eye Department. 2.30 P.M., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.
FRIDAY.—2 P.M., Dr. C. E. Sundell Diseases of Children. 3 P.M., Lecture Demonstration:—Dr. C. E. Sundell: Physiology of Digestion in Infants. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.
SATURDAY.—10.30 A.M., Mr. W. E. Tanner: Operations. 3 P.M., Mr. H. W. Carson: Surgical In-patients.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.
TUESDAY, June 28th.—10.30 A.M., Demonstration V., The Modification of Milk.
THURSDAY.—3 P.M., Demonstration VI., The Uses of Dried Milk and Patent Foods.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.
A Course of Post-graduate Clinical Lectures and Demonstrations in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.
TUESDAY, June 28th.—4 P.M., Mr. K. A. Lees: Chronic Otitis Media.
THURSDAY.—Mr. V. Nesfield: The Temporary Treatment of Acute Glaucoma by Paracentesis.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.
A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.
FRIDAY, July 1st.—5.15 P.M., Lecture IX.: Dream Interpretation (II.).

Appointments.

GRAHAM, LEWIS, M.S. Lond., F.R.C.S. Eng., has been appointed Honorary Obstetric Officer, Queen's Hospital, Birmingham.
KIDD, E., M.B., B.S. Durh., Certifying Surgeon under the Factory and Workshop Acts for the Washington district of the county of Durham.
MARNOCH, J., M.B., C.M. Aberd., a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of Aberdeen, Kincardine, and Banff.
MCKENDRICK, A., F.R.C.S. Edin., D.P.H., a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of the Lothians and Peebles.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Asylum.—Temp. Jun. Asst. P. £250.
Ashton-under-Lyne District Infirmary.—H.S. £200.
Bedford County Hospital.—H. S. £200. Asst. H.S. £150.
Birmingham Education Committee.—Part-time M.O.
Birmingham and Midland Ear and Throat Hospital.—H.S. £200.
Birmingham General Hospital.—H.P. £100. H.S. to Special Depts. £125. H.S. £100.
Blackburn and East Lancashire Royal Infirmary.—Third H.S. £250.
Blyth Urban District.—M.O.H. and Sch. M.O. £800.
Bournemouth, Royal Victoria and West Hants Hospital.—Hon. Sen. and Jun. M.O.'s.
Bradford Royal Infirmary.—H.S. £200.
Burnley County Borough.—Tuberc. O. and Director of Municipal Laboratory. £650.
Burnley, Victoria Hospital.—H.S. £200.
Cambridge, Adenbrooke's Hospital.—H.S. £130.
Cardiff, King Edward VII. Hospital.—H.S. £200.
Charing Cross Hospital, Agar-street, W.C.—Med. Reg. £150.
Chester, City of.—Asst. M.O.H. £500.
Colchester, Essex County Hospital.—H.S. £200.
East London Hospital for Children and Dispensary for Women, Shadwell.—Cas. O. £120.
Eday, Orkney.—M.O. £9 per week.
Enfield Education Committee.—Sch. M.O. £500.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.
Great Northern Central Hospital, Holloway-road, N.—Clin. Asst. £1 1s. per session. Dental S.
Halifax, Royal Halifax Infirmary.—Third H.S. £200.

Hospital of St. John and St. Elizabeth, 40, *Grove End-road, N.W.*—Asst. S.
Huddersfield County Borough.—Asst. M.O.H. £500.
Leeds Public Dispensary.—Sen. Res. M.O £200.
Leeds University (Leeds Maternity Hospital).—Tutor in Obstetrics and Res. M.O. £300.
Leicester Royal Infirmary.—H.S. £200.
London County Council.—Asst. M.O. for Mental Hosp. Service. £300.
London Temperance Hospital, Hampstead-road, N.W.—Asst. Res. M.O. £120. Surg. Registrar. 40 guineas.
Lucknow University, India.—Prof. of Pathology. Rs.1200 a month. Prof. of Physiology. Rs. 1400 a month.
Manchester, Ancoats Hospital.—Res. Surg. O. £250.
Manchester Children's Hospital, Pendlebury.—Res. M.O. £150.
Manchester Ear Hospital.—Hon. Asst. S. Hon. Radiologist.
Manchester Royal Infirmary, Central Branch, Roby-street.—Female Res. M.O. £200.
Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Female Surg. £200.
Middlesex Hospital.—Cas. M.O. £104.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Res. M.O. £250.
Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst M.O. £400.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Nottingham General Hospital.—Res. Cas. O. £250.
Oxford, Radcliffe Infirmary and County Hospital.—Cas. H.S. £200.
Portsmouth, Royal Portsmouth Hospital.—H.S. £150.
Reading, Royal Berkshire Hospital.—Second H.S. £200.
Royal Free Hospital, Gray's Inn-road, W.C.—Two H.P.'s. £50.
Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.
St. Mary's Hospital, Paddington, W.—Cas. P. £100.
Saint Pancras Dispensary, Oakley-square, N.W.—Res. M.O. £225.
Salford Royal Hospital.—H.S. Cas. H.S. Each £150.
Seamen's Hospital, Albert Dock, Connaught-road, E.—H.S. £150.
Sheffield, East End Branch of the Children's Hospital.—Female H.S. £150.
Southampton Free Eye Hospital.—H.S. £200.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H. S. £150.
Stroud General Hospital.—H.S. £200.
Sydney University, New South Wales, Australia.—Lecturer in Veterinary Anatomy and Surgery (including Obstetrics). £500.
Union of South Africa Government.—Asst. P.'s in Mental Hospital Service. £400.
West London Hospital, Hammersmith-road, W.—P. Neurologist.
Westminster Hospital.—H.P. H.S. Asst. H.P. Asst. H.S. Med. Registrar. £50.

THE Chief Inspector of Factories announces the following vacant appointments: Ruabon (Denbigh), West Drayton (Middlesex).

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act. 1906, for the Falmouth and Truro, Helston, Newquay, Penzance, Redruth, and St. Austell County Courts, in Circuit No. 59. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than July 13th, 1921.

Births, Marriages, and Deaths.

BIRTHS.

KEYNES.—On June 17th, at 10, Boundary-road, N.W. 8, to the wife of Geoffrey Keynes, F.R.C.S. Eng.—a son.
LEATHART.—On June 14th, at Tollemache-road, Birkenhead, the wife of P. W. Leathart, M.B., B.C., of a son.
PLATTS.—On June 13th, at Clifton Lawn, York, the wife of S. Goodman Platts, M.B., of a daughter.
QUICK.—On June 13th, at Varfell, Eaton-crescent, Swansea, the wife of Hamilton E. Quick, M.B., F.R.C.S., of a daughter.
RIGGALL.—On June 20th, at 31, Wimpole-street, W. 1, the wife of Robert M. Riggall, L.R.C.P. Lond. and Edin., of a daughter.

MARRIAGES.

ALTON—THIVE.—On June 14th, at Christiania, Edgar Hepworth Alton, L.R.C.P. & S. Edin., of King's Norton, Birmingham, to Ida Thive, eldest daughter of the late Ludovick Rördan, of Porsgrund, Norway.
CLARKE—TYRWHITT DRAKE.—On June 16th, at the Abbey, St. Albans, Sidney H. Clarke, M.D., of Longbutts, St. Albans, to May Gladys, youngest daughter of the late Rev. W. T. Tyrwhitt Drake and of Mrs. Tyrwhitt Drake, of Borogate, St. Albans.
CONNOR—LEES.—On June 11th, at the British Embassy Church, Paris, Brevet Lieut.-Colonel Frank Powell Connor, D.S.O., F.R.C.S., I.M.S., to Grace Ellen, daughter of Reginald O. Lees, late Director, Indian Government Telegraphs.
KEYMS—BENNETT.—On June 16th, at St. James', Piccadilly, J. J. Keyms, L.R.C.P. & S. Irel., to Alice, second daughter of the late Frank Bennett, of Cregane Manor, Rosscarbery, Co. Cork.
NOON—SOUTH.—On June 18th, at St. Peter's, Crawley, Charles Noon, F.R.C.S., to Cicely, eldest daughter of F. W. South, of Ifield, Sussex.
TAYLOR—LE MAISTRE.—On June 14th, at the Parish Church, Everingham, Harold Bourne Taylor (late Captain, R.A.M.C., M.R.C.S., L.R.C.P., to Francesca Maria, only daughter of Rev. Sylvester and Mrs. le Maistre.

Notes, Short Comments, and Answers to Correspondents.

REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1918.[1]

THE average strength of European troops (Regulars and Territorials) in India during 1918 was 87,982, as compared with 80,825 in the previous year, and 69,440 in the pre-war quinquennium 1910–14. For the whole force the admissions to hospital averaged 1030·2 per 1000, the deaths 16·19, the invalids sent home 22·81, and the average constantly sick, 60·00. All of these ratios are considerably higher than in any of the years immediately preceding; in 1917 the corresponding figures had been 771·7, 4·83, 16·54 and 45·60 respectively; in the pre-war quinquennium (1910–14) they had been 567·2, 4·51, 7·03 and 30·13. There has been no such high admission-rate since 1903 (when it was 1035·5); no such high death-rate since that of 1898 (20·31), no such invaliding since 1907 (25·47), and no such constantly sick ratio since that of 1903 (63·17).

Effect of War Conditions on the British Garrison.

The Director of Medical Services in India, in his introductory remarks, points out that, in considering the statistics of 1918, it is necessary to bear in mind the manner in which war conditions had affected the British Garrison; the standard of recruitment was lower, the more fit men had passed on to the Expeditionary Forces, leaving the debilitated behind, and invaliding had been delayed owing to shipping difficulties. All the principal military stations had increased ratios for admission to hospital and death, as compared with the previous year, with the one exception of Rangoon; and for average constantly sick, except Rawal Pindi.

The main cause of this increase was the epidemic prevalence of influenza, for which there were 19,308 admissions and 775 deaths, the ratios per 1000 strength being 219·5 and 8·81. The disease was introduced into the country through the port of Bombay, where it appeared first among the civilian population in the middle of June, and among the military immediately after. This epidemic abated on July 3rd, but a second outbreak started in September, and lasted into November, this being more severe than the first wave. All the large military stations suffered; the garrison most severely affected was that of Ahmednagar, where the influenza admissions reached the very high ratio of 459·8 per 1000 strength, the death-rate from this cause being 11·70 per 1000, and the case-mortality 2·54 per cent.; other large garrisons, with an admission-rate over 300 per 1000, were Meerut (392·6), Lahore (392·5), Colaba (376·4), Nowshera (360·5), Rawal Pindi (321·3) and Peshawar (313·0). The highest influenza death-rates were experienced at Dalhousie (19·20 per 1000, with a case-mortality of 8·37 per cent.), Nowshera (also 19·20, with a case-mortality of 5·33 per cent.), Peshawar (19·15, case-mortality 6·12 per cent.), Delhi (18·93, case-mortality 7·16), and Lahore (18·55, case-mortality 4·73). The most severe type of the disease appears to have been experienced at Quetta, where, though the admissions were not in a higher ratio than 152·4 per 1000, the death-rate was 13·67, giving a case-mortality of 8·97 per cent.—higher than that at Dalhousie. On the other hand Colaba, with the high admission-rate just mentioned (376·4), had the low death-rate of 4·34, giving a case-mortality of only 1·15 per cent.; Lucknow, with 279·0 admissions per 1000 had a case-mortality of only 1·09 per cent. Rangoon (no doubt, from its detached situation) suffered less than any other large station; the influenza admissions were only 72·4 per 1000, and there was only one death (0·98 per 1000). Two points of interest are mentioned in regard to this epidemic: (1) the streptococcal element was omitted in the vaccines prepared, as a result of discussion at a conference of bacteriologists, this organism not having been often found to be present; (2) there was no mention of the occurrence of hæmorrhages, as had been reported in other countries.

Malaria the Chief Cause of Sickness.

In spite of the prevalence of influenza, malaria retained its position as the chief cause of sickness and inefficiency among British troops in 1918. The admissions numbered 23,687 (equal to 26·13 per cent. of the total admissions

[1] Calcutta: Superintendent of Government Printing. 1920.

for all causes), and were in a ratio of 269·2 per 1000 of total strength, as compared with 227·9 in 1917, and 117·2 in the pre-war quinquennium 1910–14.

It is pointed out, however, that the total admissions for malaria have probably been increased during each year of the war by the inclusion of relapse cases whose infections were contracted overseas, and whose statistics should more correctly be debited against the Expeditionary Forces. Every effort has been made to keep these statistics distinct; but so long as practical means are not available to distinguish between relapses and fresh infections a small error must occur, which may be in part or in whole counter-balanced by the cases which contracted their infection in India, but did not exhibit the disease until they were absorbed into the Expeditionary Forces.

Secunderabad had an admission ratio for malaria of 965·2 per 1000, the actual number of cases being 2998; the disease was of a very mild type, and not a single death occurred; at this station No. 8 Reserve Battalion, with a strength of 1451, had 1762 admissions for malaria (1213 per 1000). Various drainage works were carried out, and it is stated that the "comparative absence of fresh infection during the latter half of the year is promising," in spite of the increased rainfall. Mosquito-nets are authorised in the plains for all British troops and their families. It is not stated whether or no they are used. The issue of quinine as a prophylactic is left to the discretion of the medical authorities. It is not easy to see what other course could be adopted. As malaria is undoubtedly a preventable disease, the old query—"If preventable, why not prevented?" will continue to be asked; if the sanitary measures required are carried out mosquitoes would cease to be prevalent; if quinine were administered the troops would be rendered immune; if mosquito-nets were used they would be protected. The results that have been obtained in Italy, Panama, and elsewhere have proved beyond question that under the most difficult conditions of environment satisfactory prophylaxis is practicable. Peshawar cantonment is referred to in the Sanitary Commissioner's report in the following words: "The presence of a highly infected civil population and the existence of *kutcha* drains combined with irrigation is sufficient to account for the incidence of malaria." There is no hint at any need for action.

The Enteric Fevers.

For "enteric fevers," or "enterica," there were 663 admissions and 62 deaths, as compared with 276 and 33 respectively in 1917, and 227 and 26 in 1910–14; the ratios per 1000 were 7·5 and 0·70 in 1918, 3·4 and 0·41 in 1917, and 3·3 and 0·37 for 1910–14. Of the total cases in 1918 only 97 (with 23 deaths) were returned as "typhoid"; 209 (with 8 deaths) and 8 (with no deaths) were "paratyphoid" A and B respectively; and 349 (with 31 deaths) are classed in an "enteric group," which now includes cases formerly returned as pyrexia of uncertain origin, "P.U.O.," that is, "cases from which the specific organism could not be recovered, [but which] may be diagnosed on clinical grounds or on a rising Widal reaction." Eliminating this "enteric group," there remain 314 admissions for typhoid and paratyphoid A and B, with 31 deaths, 23 of these being due to typhoid and 8 to paratyphoid A. By far the largest number of admissions occurred at Bangalore (127, or 14·4 per 1000), where there were 71 cases in June, July, and August, an additional 30 in May and September, but only 26 during the remaining seven months of the year. Of the total number 23 (mostly among furlough men) had probably not contracted infection in Bangalore itself. The South Lancashire Regiment, 6th Battalion, suffered most, with 23 cases and 2 deaths. A particular cookhouse appeared to be the source of infection, and on bacteriological investigation a soldier was found to be a carrier of *B. paratyphoid A*, and was transferred to the enteric convalescent depot at Wellington. The disease prevailed throughout the station, and carriers played a considerable part in the spread of infection; flies were also abundant and the disease was present among the civil population. At Peshawar, Kirkee, Poona, and Lahore there was also excessive prevalence, though not a high mortality, except at Lahore, where 11 out of 33 cases were fatal.

Mortality from Other Diseases.—Home Invaliding.

For dysentery, colitis and diarrhœa the combined admission ratio was 49·2 per 1000, compared with 24·3 for the pre-war quinquennium (1910–14); the corresponding death ratios were 0·30 and 0·22. At Secunderabad the dysentery admissions and deaths were 61·7 and 0·32 per 1000, and for diarrhœa 32·2 admissions, with no death. Drinking-water supplies at various railway stations were investigated by local committees. It is regrettable that the incidence of venereal diseases (62·5 admissions per 1000) again shows a marked increase; in 1909 the admission ratio had been 67·8; in 1915 it had fallen to 29·1; in 1917 it was 52·0. Special attention has been given to early detection of the disease by regular inspection of new arrivals, and by surprise inspections, and the men have been encouraged to seek early treatment.

There were only 8 cases of plague (4 fatal). This is a good omen. For cholera there were 91 admissions, with 37 deaths (1·0 and 0·42 per 1000); 32 cases occurred at Poona and 18 at the neighbouring station of Kirkee, with 10 deaths at each station. The Kirkee water-supply at Pashan lake was reported to be infected; but the water was chlorinated at the waterworks and again in the British lines, and was not looked upon as the source of infection. A few days later 23 cases were admitted to the Station and King George's Hospitals at Poona. The milk was suspected, but no definite evidence of infection was obtained.

There were 911 admissions for heatstroke among British troops throughout India in 1918, with 97 deaths (10·4 and 1·10 per 1000). Of these cases 373, or 41 per cent., with 2 deaths, occurred at the single station of Nowshera, 114 in the North Staffordshire Regiment, and the remainder among the R.A. and Machine Gun Corps; one-fifth of the whole strength of the station appear to have been affected. The cases exhibited all degrees of severity, from simple exhaustion to the major type with cerebral symptoms and hyperpyrexia. No details are furnished as to the circumstances causing, or accompanying, this remarkable visitation, except that during June, July, and August abnormal dry and wet bulb temperatures were recorded. Pulmonary tuberculosis caused 154 admissions to hospital and 18 deaths, the ratios being 1·8 and 0·20 per 1000 respectively, a slight increase on those for the previous year (1·5 and 0·16, and the pre-war quinquennium, 1910–14 (1·1 and 0·16); there was no special prevalence at any one station. Diphtheria caused 90 admissions (of which 41 were at Quetta, from a newly arrived draft); there were only two deaths.

At the Kasauli and Coonoor Institutes 313 men and 45 women and children were treated for dog-bite; there were no deaths. Small-pox caused 117 admissions and 18 deaths, giving ratios of 1·3 and 0·20 per 1000.

The total number of men invalided home for all causes was 2007, being in a ratio of 22·8 per 1000, as compared with 16·5 in 1917, and 11·0 for the decennium 1908–17; the chief causes were heart disease (288), epilepsy (55) and insanity (136), malaria (147), and pulmonary tuberculosis (126).

Officers, Women, and Children.

The average strength of officers with British units was 4524, among whom the hospital admission-rate was 1344·6, and the death-rate 15·92; the corresponding ratios for 1917 were 965·5 and 7·03 per 1000, and for the pre-war quinquennium, 1910–14, 567·5 and 5·14. Out of the whole number of 72 deaths among officers 30 were due to influenza and 8 to pneumonia; there were 59 cases of typhoid, giving a ratio of 13·0 per 1000, the corresponding ratio for non-commissioned officers and men being 7·5 per 1000; only one officer died from this disease. Among the women (average strength, 1481) the admission- and death-rates were 603·0 and 24·98; anæmia and debility (120 per 1000), influenza (82·4), and malaria (44·6) were the chief causes of sickness; and pneumonia (4·73), pulmonary tubercle (2·03), and enteric fever (1·35) the chief causes of death. Among the children (average strength, 2624) the chief causes of illness were influenza (53·4 per 1000), malaria (51·4), and bronchitis (48·0); the corresponding death ratios being 1·52, 0·38, and 0·38 respectively. The admission and death ratios for all causes were 432·9 and 20·20 per 1000 respectively; for 1917 these ratios had been 355·6 and 12·17.

INDIAN ARMY.

The average strength of Indian troops in 1918, including those in China, but "excluding those under field-service conditions," was 341,458, as compared with 191,242 in 1917, and 130,261 in the pre-war quinquennium, 1910–14. The admissions to hospital reached the enormous total of 292,393, being in a ratio of 856·3 per 1000; the deaths numbered 9959 (29·17 per 1000); the ratios for invaliding and average constantly sick were respectively 19·2 and 40·7. These ratios (except that for invaliding) are much in excess of those for 1917, when the corresponding figures were 741·4, 11·51, 17·9, and 34·3; and, if compared with the average of the five years (1910–14) before the war, the increase is very great; the admissions to hospital during that period averaged 544·6, the deaths only 4·39, the invalids only 5·4, and the average constantly sick 20·7 per 1000.

Influenza, Malaria, and Pneumonia.

The great increase in admissions and mortality is largely accounted for by a widespread epidemic of influenza, which caused 46,715 admissions and 5200 deaths (136·8

and 15·23 per 1000). At Dera Ismail Khan there were 443·6 influenza admissions per 1000 strength, but the case-mortality ratio was only 1·56 per cent., giving a death-rate of 6·92 per 1000. At Risalpur, on the North-West Frontier, with 234·8 influenza admissions per 1000, the case-mortality was 16·43, giving a death-rate of 38·59 per 1000. At Kirkee, with the very moderate admission ratio of 68·5 per 1000, the deaths amounted to 32·58 per 1000, giving a case-mortality of 47·57 per cent. After influenza, malaria was the most frequent cause of admission to hospital (129·7 per 1000), but showed much improvement on the figures for the two years preceding (184·6 in 1917 and 200·7 in 1916), though higher than the ratio for 1910–14, which was 113·3. The mortality was 1·00 per 1000. At Tank and Fort Sandeman the admission ratios were highest (1280·2 and 1127·4); no specially infected area was discovered at either place. Attention is called to the fact that Secunderabad "does not figure among the ten worst stations this year." This is ascribed to the effect of drainage measures which were commenced in 1917 and consisted briefly in the drainage of the Picket and other tanks and the substitution of dry for wet cultivation. The admission ratio was 141·4, compared with 518·4 in 1917; this mild incidence may also be compared with the excessive prevalence among British troops (965·2) at the same station already alluded to.

Pneumonia caused an admission-rate of 19·6, and a death rate of 6·02 per 1000; this, as usual, was the most fatal disease for native troops (influenza excepted, which it so frequently accompanies), and to this cause probably many of the deaths recorded under pneumonia may be attributed, though efforts were made to differentiate between deaths due to primary pneumonia and pneumonia as a complication.

Tuberculosis; Diarrhœal Diseases; Plague.

Pulmonary tuberculosis (2·5 admissions per 1000, as compared with 2·1 in 1910-14) has not much increased, though the death-rate (0·63) is much heavier than that of the former period (0·22). As usual, Gurkha troops suffered the most (5·4 admissions and 1·90 deaths). The group of diarrhœal diseases (dysentery, colitis, and diarrhœa) showed a very great increase (as compared with 1910–14) among Indian as with British troops; the admissions and deaths for the three affections combined amounted to 68·4 and 0·45 per 1000 respectively, as compared with 33·5 and 0·14 in the pre-war period. Venereal diseases caused 18,125 admissions (53·1 per 1000), also a considerable increase over the ratios for 1916 and 1917, which were 40·1 and 45·0; in 1910–14 the ratio had been 14·8. At Deolali the admission ratio was 361·8, and at Bombay 242·4. Plague caused 121 admissions and 62 deaths (0·4 and 0·18 per 1000), compared with corresponding ratios of 0·60 and 0·30 in 1917, and 0·30 and 0·15 in the pre-war quinquennium. There was an appreciable reduction in the admissions for cholera (85, or 0·2 per 1000) compared with the previous year (0·7), and the death-rate (0·13) was less than half that of 1917 (0·29); the case-mortality, however, was high (52·94 per cent.); there was no epidemic prevalence. Enterica (0·8 and 0·28 cases and deaths per 1000) also showed a reduction in cases, though the deaths were more in number than in 1917.

GENERAL POPULATION.

For British India, as a whole, the birth-rate is recorded as 35·35 per 1000, as compared with 38·65, the average of the preceding five years; but it is stated that this fall is due mainly to interference with registration on account of the influenza epidemic. The highest ratios were recorded in Delhi (47·92) and the Central Provinces and Berar (43·24); the lowest in Ajmer-Merwara (26·35) and Madras Presidency (28·9). The general death-rate was 62·46 per 1000, ranging from 38·10 in Bengal and 39·20 in Lower Burma to 102·60 in the Central Provinces and Berar, and 114·78 in Ajmer-Merwara. The infantile mortality (under 12 months) was lowest in Assam (21·6 per 100 births) and Bengal Presidency (22·8), and highest in Bombay city (59·6); in Madras city it was 35·5, and in Calcutta 28·0.

Much useful work is being carried out in various cities towards the prevention of infant mortality, by the provision of trained midwives, the establishment of dispensary centres, and the appointment of municipal nurses and health visitors. The total number of births is stated as 8,430,560, and the total deaths 14,895,801 (62·46 per 1000). Of this latter total, 11,134,441 (46·69 per 1000) are returned as "fevers," amounting to 74·7 per cent. of the total mortality, and of these deaths 7,402,076 were registered during the last quarter of the year, when influenza was prevalent. It is stated that "there is no evidence to show that 1918 was for malaria in any sense an exceptional year," and it is suggested that the mortality directly and indirectly due to influenza was near the mean between (1) "the excess in the mortality from all causes between June 1st and Dec. 31st over the five years' mean"—6,812,633; (2) an estimate obtained "by subtracting from the total mortality from all causes the deaths registered as due to the chief epidemic diseases—plague, cholera, and small-pox, and comparing this figure with one similarly obtained for the previous quinquennium"; (3) the excess mortality from "fevers" and respiratory diseases over the average for the five years. The respective figures for the two latter estimates are 7,304,478 and 7,151,971; the mean of the three, 7,089,694, is adopted by the Sanitary Commissioner. The heaviest incidence, judging by the excess mortality, was experienced by the Central Provinces and Berar (66·4 deaths per 1000), Ajmer-Merwara (59·5), Delhi province (56·6), and Bombay (54·9); in Coorg the excess was only 11·5, and in Bengal only 8·5 per 1000. Speaking generally, districts on or near the sea coast had a comparatively low mortality (under 20 per 1000). As to the origin of the epidemic, the Sanitary Commissioner states that "the case for the introduction of infection by shipping must be left as unproven. The case for endemic foci is just as uncertain . . . . Although it cannot be stated definitely that influenza existed in India before the first official intimation of its existence early in June in Bombay, yet the possibility cannot be excluded."

Many other matters of interest are dealt with in this exhaustive report, which extends to 322 pages and is accompanied by an excellent map of India and very numerous diagrams and tables. The sections dealing with the European and Indian Armies are contributed by the Director of Medical Services; for the remainder, referring to the general population, jails, &c., Lieutenant-Colonel F. H. G. Hutchinson, I.M.S., Sanitary Commissioner with the Government of India, is responsible.

NATIONAL BABY WEEK.

THE fifth birthday of National Baby Week, to be celebrated on July 1st, and for a week thereafter, will again give to the nation an opportunity of considering the needs of its children, and the steps which are—or are not—being taken to meet those needs. Birthdays have their uses, and not least in that they serve as landmarks, from whence one can survey the progress made, or the ground lost, in the past years. In this fifth year of its existence the National Baby Week Council, in common with other societies engaged in child welfare work of one sort or another, is able to rejoice in the decreasing infant mortality rate, the figure for 1920 (80 per 1000 births) being the lowest recorded. Many influences have contributed to bring about this satisfactory result, and the National Baby Week Council feels that it may claim a not inconsiderable share of the credit. Since the first Baby Week held in 1917, the Council has worked steadily to make known the position of child welfare in this country. Its work is wholly that of education and propaganda: it exists to draw attention to the child, its needs, its disabilities, and its possibilities. Each year the Council has concentrated on some particular aspects of child welfare, thus focusing attention on one or two important points, not suggesting that by so doing it has covered the whole field of child welfare, but rather excluding some important points in order that others may for the time being be emphasised. Thus, in its first year, attention was drawn to the facts of infant mortality, and the importance of infant life to a nation which was daily losing the flower of its manhood in the great war. In 1918, the teaching of mothercraft was the slogan; in 1919, the creation of new and better ideals of babyhood and the importance of natural feeding; and in 1920, the necessity for liquor control in the interests of maternity and child welfare, the better care of the unmarried mother and her child, and the urgent need for some scheme of pensions for civilian widows with young children.

This year the Council is emphasising three matters of great importance, two of which have already been emphasised in previous years: 1. The importance of natural feeding, in view of the fact that a naturally-fed baby has twice as good a chance of surviving as an artificially-fed baby. 2. The urgent need for some scheme of pensions for civilian widows with young children, which will enable the children to remain in the care of their own mothers, instead of being entrusted to the much less efficient and much more expensive care of public institutions. 3. The prevention of infantile blindness and the importance of notification and treatment of ophthalmia neonatorum. This year, too, as last year, the Council is identifying itself with the Children's Era Movement, which aims at the closer coöperation of all existing agencies for the betterment of the child—religion, health, recreation, education, &c. While the Council rejoices with other child welfare societies in the lowered infant mortality rate, it realises that in success there is an element of danger. Those who care for the children of this nation must not be content with this lowered rate: their aim must be still further to reduce it. It must be remem-

bered that our daughter countries can point to a still lower rate—for instance, the mortality rate for the whole Commonwealth of Australia in 1919 was only 69·21 per 1000 births for children under one year. The aim of the Baby Week Council is not only to reduce the death-rate, but also to reduce the correspondingly high *damage*-rate among the children who manage to survive. It has been said that every social problem is a problem of child welfare. It is certainly true that every social problem takes its toll of child lives. Bad housing, defective sanitation, alcoholism, venereal disease, industrial employment of mothers, all these must be held responsible to an enormous extent for the heavy damage-rate among little children in this country.

A criticism sometimes heard suggests that the mothers resent the help offered by welfare societies and regard it as interference. In a few isolated cases perhaps they do, but the increase in the number of successful infant welfare centres and similar agencies in the country is evidence of the fact that these centres, schools for mothers, Baby Week, and so forth, supply a felt need.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

A YEAR ago an amalgamation took place under Royal Charter of the Incorporated Society of Trained Masseuses and the Institute of Massage and Medical Gymnastics with the righteous aim of advancing the profession of massage in the broad sense, and of affording protection to those qualified to practise it. The following list of recognised training centres, with the subjects in which classes are held, has now been drawn up and may be found useful to our readers. Massage=M. Medical Electricity=E. Medical Gymnastics=G.

Hospital Schools: London.

	Subjects taught.
City of Westminster Infirmary	M.
Fulham Infirmary	M.
Guy's Hospital	M. E. G.
King's College Hospital	M. E. G.
Lambeth Infirmary	M.
Maida Vale Hospital	M. E.
Middlesex Hospital	M. E. G.
National and University College Hospitals	M. E. G.
Queen Mary's Hospital for the East End	M.
Royal National Orthopædic Hospital	M. E. G.
St. Thomas's Hospital	M. E. G.
West End Hospital	M. E. G.
Westminster Hospital	M. E. G.

Provinces.

Manchester, Ancoats Hospital	M. E.
York, County Hospital	M.
Buxton, Devonshire Hospital	M. E.
Ipswich, East Suffolk and Ipswich Hospital	M. E.
Birmingham, General Hospital and Orthopædic Hospital	M. E. G.
Bristol, General Hospital	M. E. G.
Nottingham, General Hospital	—*
Worcester, General Infirmary	M.
Cardiff, King Edward VII. Hospital	M. E.
Norwich, Norfolk and Norwich Hospital	M.
Carshalton, Surrey, Queen Mary's Hospital	M. E
Newport, Mon., Royal Gwent Hospital	M.
Bradford, Royal Infirmary	M. E.
Bristol, Royal Infirmary	M.
Leicester, Royal Infirmary	—*
Liverpool, Royal Infirmary	—*
Manchester, Royal Infirmary	M. E. G.
Bath, Royal Mineral Water Hospital	M. E.
Brighton, Royal Sussex County Hospital	M. E.
Newcastle-on-Tyne, Royal Victoria Infirmary	M. E. G.
Salford, Salford Royal Hospital	M. E.
Shrewsbury, Salop Infirmary	M.
Rochester, St. Bartholomew's Hospital	M. G.
Oswestry, Shropshire Orthopædic Hospital	M. E. G

Ireland.

Dublin, Adelaide Hospital	—*

Scotland.

Glasgow, Western Infirmary	M. E. G.

* Not training at present.

Colleges and Schools: London.

Misses Bear, Queen Alexandra House Gymnasium, Kensington Gore, S.W.	M. G.
Misses Brown and Humble, Training College for Remedial Gymnastics, and Massage, 36, Pembridge Villas, W. 11	M. E. G.
Miss Joyce Buckley, School of Massage and Swedish Remedial Gymnastics, 12, Buckingham-street, Strand, W.C. 2	M. E. G.
Mrs. Manning Carr, 3, Bedford-place, W.C. 1 (Evening Classes)	E. G.
Mrs. Penfold, Hampstead Medical Gymnastic College, 27, Canfield-gardens, N.W. 6	M. E. G.
Miss Rose Morris, 2, Albany-terrace, Regent's Park, N.W.	M. E. G.
National Institute for the Blind (Massage Branch), 224, Great Portland-street, W. 1	M.
Miss Spelman Stanger, Denmark Hill Gymnasium, Sunray-avenue, Herne Hill, S.E. 24	M. G.
Mrs. Hoghton Stewart, London School of Massage and Swedish Remedial Gymnastics, Westminster Medical School, 12, Caxton-street, S.W.	M. E. G.
Mr. T. W. Wall, Central London School of Massage for Men, 211, Great Portland-street, W. 1	M. E.
Miss Wilkie, Chelsea School of Physical Training (2 years' course), Manresa-road, S.W.	M. G.
Dr. Justina Wilson, Swedish Institute, 106, Cromwell-road, S.W.7	M. E. G.

Provinces.

Miss Chuck, School of Massage, 18, Falkner-square, Liverpool	M. E. G.
Miss Irene Marsh, Liverpool Physical Training College (2 years' course), Bedford-street, Liverpool	M. G
Miss Masters, Southport School of Massage, 22, Part-street, Southport	M. E
Miss A. M. Poulter, School of Massage and Medical Gymnastics, 27, Cambridge-road, Hove, Brighton, Sussex	M. E. G.
Miss Weeks, 22, Pinecliffe-avenue, West Southbourne, Bournemouth	M.

Ireland.

Miss Despard, Lincoln Chambers, Dublin	E.
Miss Hogg, School of Massage and Medical Gymnastics, 12, Hume-street, Dublin	M. E. G.
Miss E. Sweeny, 15, Upper Mallow-street, Limerick	M.

Scotland

Misses Hastings and Ewart, School of Massage and Swedish Remedial Gymnastics, 20, Dublin-street, Edinburgh	M. E. G.

THE A.D.R.M.

ACCORDING to *La Presse Médicale* (June 4th), a really useful way of fostering amical relations between medical men in France and other allied or friendly countries is in contemplation. It has been suggested that the exchange for a time of the children of medical men living in different countries might conduce to the happiest results. As a preparatory measure, an invitation has been issued by the Association pour le Développement des Relations Médicales (A.D.R.M.) to those French medical men who would like to take advantage of such an arrangement to send their names and addresses, and to indicate the town in England or Spain to which they would like to send their children. Steps will then be taken to ascertain the names of doctors in the countries mentioned who would like to participate in such an exchange. Among other suggestions accepted by the Association, the general secretary of which is Mr. Charles Béclard, Faculté de Médecine, 12, rue de l'Ecole de Médecine, Paris, was one by Mr. Desmarets that any member travelling abroad should be entitled to receive a letter from the committee introducing him to his colleagues in foreign countries.

MUZZLING ORDERS.

THE most recent outbreaks of rabies in England occurred at Southampton on June 6th and at Salisbury on June 7th. There has been no recent outbreak of rabies in Scotland. In Wales the last outbreak of rabies occurred on Sept. 8th, 1920. The Minister of Agriculture states that it is not possible at present to give any indication as to when the muzzling orders will be withdrawn from the scheduled districts in the case of Southampton and Salisbury. No muzzling orders have been recently applied to Scotland. As regards Wales the muzzling order was withdrawn on May 1st last.

INFANT MORTALITY IN THE WEST INDIES.

FIGURES relating to infant mortality in the parts of America under British rule were recently given in the House of Commons by the Secretary for the Colonies as follows:—

Colony.	Year.	Infantile mortality.*	Colony.	Year.	Infantile mortality.*
Barbados	1919	306	Leewards (*cont.*)—		
Bermuda	1919	166	Nevis	1918	264
British Guiana	1919	185	Anguilla	1918	95
British Honduras	1919	215	Trinidad	1919	155
Jamaica	1919	161	Windwards—		
Leewards—			Grenada	1920	115
Antigua	1918	177	St. Lucia	1919†	143
Dominica	1920	146	St. Vincent	1919†	111
St. Kitts	1918	255			

* The figure given is the number of deaths of children under 1 year of age per 1000 living births.
† April-December.

READ THESE REVIEWS OF

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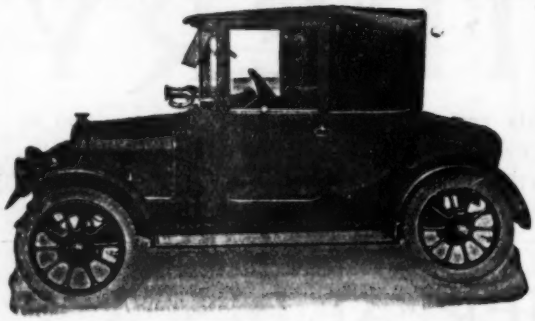

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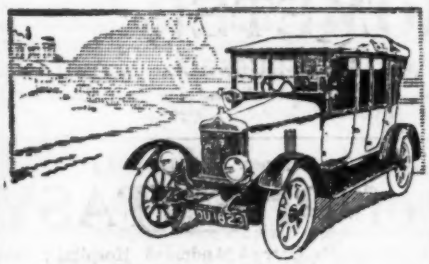

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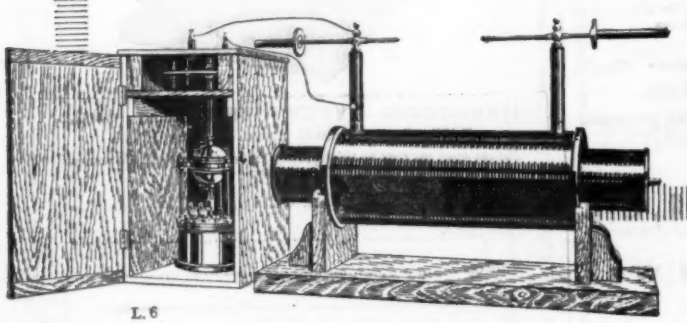

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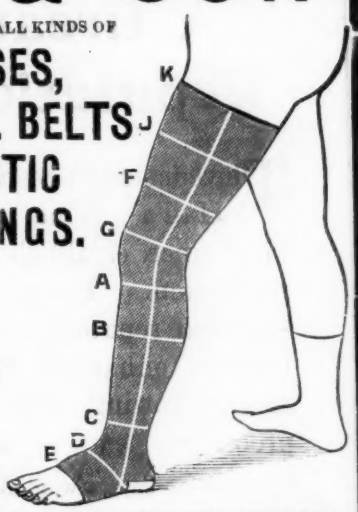

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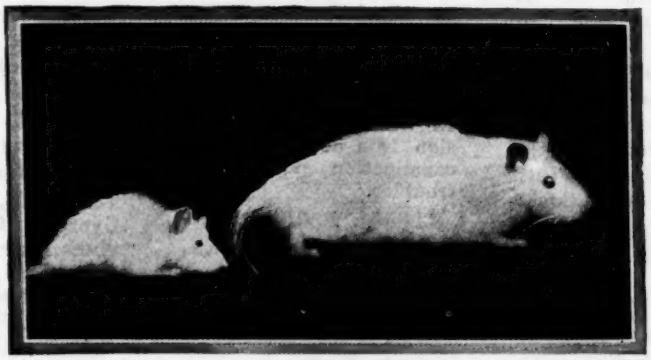

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A combination of Pure Malt Extract with Colloidal Iron, rich in protein, diastase, and vitamines—the essentials for perfect carbohydrate metabolism. In this colloidal suspension Iron does not cause constipation or digestive troubles.

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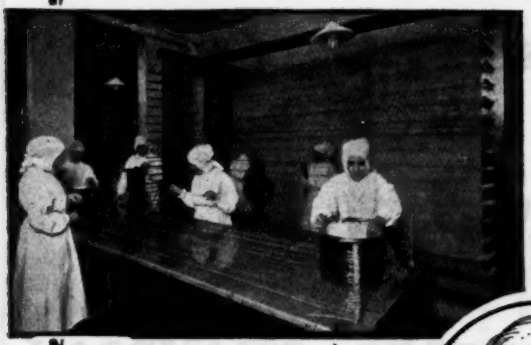

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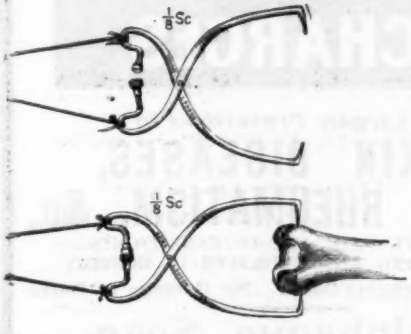

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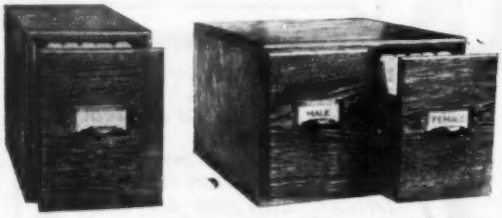

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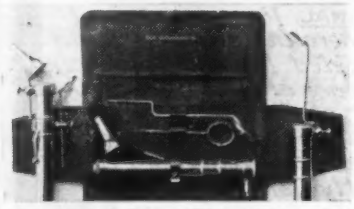

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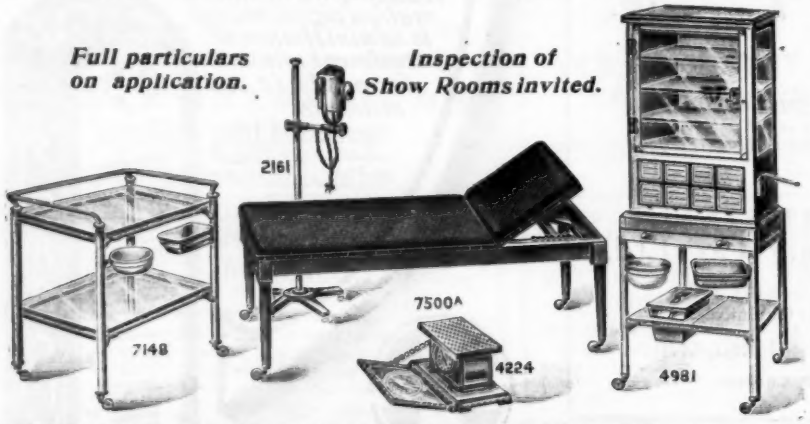

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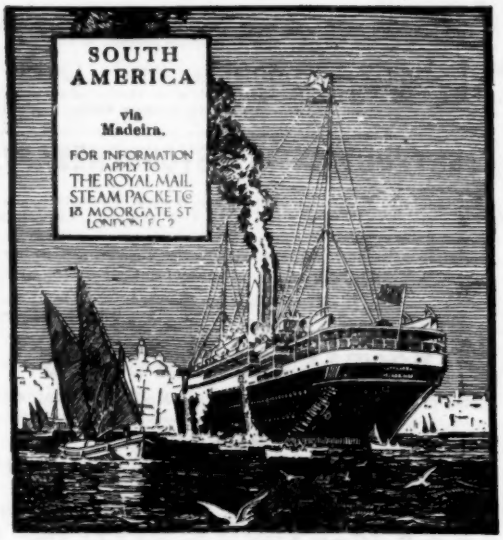

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The next Course of Instruction will be conducted in the new laboratories of the School, and will commence September 15th, 1921. The date of the D.T.M. Examination is December 13th, 1921. For further particulars apply to the Secretary, School of Tropical Medicine, University of Liverpool.

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ADVANCED LECTURE IN MEDICINE.

A Lecture on "THE INNERVATION OF STRIPED MUSCLE FIBRES and LANGLEY'S RECEPTIVE SUBSTANCE," will be given by Dr. J. BOEKE, Professor of Embryology and Histology in the University of Utrecht, at the Rooms of the ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. 1, on WEDNESDAY, FEBRUARY 16th, at 5 P.M. The Chair at this Lecture (which will be given in English) will be taken by Professor W. M. BAYLISS, M.A., D.Sc., F.R.S. Admission free, without ticket.

This Lecture has been arranged under a scheme for the exchange of Lecturers between England and Holland. Four other Dutch Lecturers will also give one Lecture each on dates to be announced later.

EDWIN DELLER, Academic Registrar.

Imperial College of Science and TECHNOLOGY, South Kensington, S.W.7.

DEPARTMENT OF APPLIED OPTICS.

A Course of Lectures on "MODERN METHODS OF MICROSCOPICAL RESEARCH," specially intended for users of the microscope, will be given by

J. E. BARNARD, Esq., F.R.M.S., F. Inst. P.,

of the National Institute for Medical Research, at the above College, beginning on Monday, February 14th, at 6.30 P.M. Fee for the Course 10s.

Applications for admission to the Course should be addressed to the Registrar.

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BY THE

ROYAL COLLEGE OF PHYSICIANS OF LONDON

AND THE

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

FIRST EXAMINATION.

This Examination will commence on Tuesday, 29th March, 1921.

Students are admitted to the Examination on producing evidence of having received instruction in the subjects thereof, in accordance with the conditions of the Regulations.

Candidates intending to present themselves for a part or parts of the Examination must give fourteen days' notice in writing to the Secretary, at the Examination Hall, Queen-square, Bloomsbury, London, W.C., from whom all particulars relating thereto, including the Regulations and Synopses of the subjects, may be obtained.

SECOND EXAMINATION.

This Examination will commence on Thursday, 31st March, 1921.

Students who have completed the required professional study, and who desire to present themselves for examination, must forward the necessary schedules through the post to the Examination Hall, Queen-square, Bloomsbury, London, W.C., fourteen days before that date.

THIRD OR FINAL EXAMINATION.

This Examination will commence on Tuesday, 5th April, 1921.

Students who have completed the required professional study and have fulfilled the other necessary conditions and desire to present themselves for examination in either or all of the subjects must forward the necessary schedules through the post to the Examination Hall, Queen-square, Bloomsbury, London, W.C., fourteen days before the Examination commences.

DIPLOMA IN PUBLIC HEALTH.

Part I. of this Examination will commence on Monday, 18th April, 1921, and Part II. on Monday, 25th April, 1921.

Candidates who have completed the prescribed courses, and who desire to present themselves for examination in either or both Parts, must forward the necessary schedule, or schedules, through the post to the Examination Hall, Queen-square, Bloomsbury, London, W.C., fourteen days before the Examination commences.

31st January, 1921. FREDERIC G. HALLETT, Secretary.

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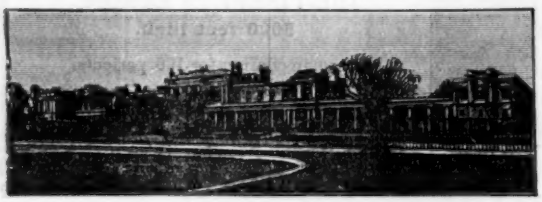

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An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light. Special features—breathing an graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

For particulars, apply SECRETARY Hillgrove, Wells, Somerset.

KINGUSSIE, N.B.

THE GRAMPIAN SANATORIUM.

Situated in the Upper Speyside district of Inverness-shire. One of the highest inhabited districts in Britain—"The Switzerland of the British Isles." Bracing and dry mountain climate, well sheltered. Sanatorium specially built for the Open-Air Treatment of Tuberculosis. Open in 1901. Elevation nearly 900 ft. above sea-level. Electric light throughout buildings and in rest shelters. All forms of treatment available.

Terms: 5½ and 6 guineas weekly. *For particulars apply:*

Dr. FELIX SAVY, Medical Superintendent

(late Tuberculosis Specialist, Aldershot Command).

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

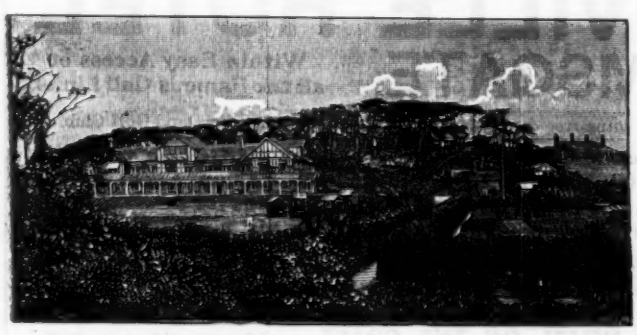
FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

TREATMENT AVAILABLE BY ARTIFICIAL PNEUMOTHORAX.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Sister and full Nursing Staff. Trained Nurse on duty all night. Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr.

For particulars apply to Dr. J. M. GERATY, Medical Superintendent, Pendyffryn Hall, Penmaenmawr, N. Wales.



MUNDESLEY SANATORIUM

Specially built for the Treatment of Pulmonary and other forms of Tuberculosis. Aspect S.S.W., on a carefully chosen site. Pure, bracing air. High sunshine record. One mile from the coast. Electric light throughout. Full Nursing Staff.

Modern X-Ray Installation.

Terms: Eight guineas weekly.

Resident Physicians { S. VERE PEARSON, M.D. (Camb.), M.R.C.P. (Lond.). L. WHITTAKER SHARP, M.B. (Camb.)

For Prospectus and full particulars apply the SECRETARY, Sanatorium, Mundesley, Norfolk.

PALACE HOTEL, MONTANA-SUR-SIERRE SWITZERLAND.

TUBERCULOSIS CURE STATION (All the Year).

THE FINEST IN EUROPE.

5000 feet high.

Accommodation for 100 patients.

Principal Resident Medical Officer:
BERNARD HUDSON, M.D Cantab., M.R.C.P.,
Late Physician to the Queen Alexandra Sanatorium, Davos Platz.

FULL PARTICULARS FROM THE SECRETARY, 5, ENDSLEIGH GARDENS, LONDON, N.W.1.

DAVOS SANATORIUM GUARDAVAL

For all Forms of
TUBERCULOSIS.

Longest insolation. Water laid on in each room. First-rate modern house with every comfort.
Medical Director: Dr. F. BAUER. Resident Physician: Dr. O. WEBER. Manager: W. STIEHLE.

NORDRACH-ON-DEE

BANCHORY (near Balmoral), SCOTLAND.

SANATORIUM FOR THE OPEN-AIR TREATMENT OF PULMONARY & OTHER FORMS OF TUBERCULOSIS.

Situated on the slope of a Pine Forest with sunny southern exposure and sheltered from high winds.

The Institution is fully equipped with Research Laboratory, Throat Room, Dental facilities, and new and powerful X-ray plant.

Treatment by Artificial Pneumothorax (with X-ray control), the various Tuberculins, Autogenous Vaccines, and Massage by qualified Masseuse, &c., are employed in suitable cases without extra charge.

There is a full day and night Nursing Staff.

Inclusive terms £9 : 9 : 0 per week.

Apply to Medical Superintendent,
GEOFFREY LUCAS, M.D., Banchory.

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE. LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H HOLLYER. 48 Spa Enquiry Offices, Droitwich (Worcs.). SPECIAL FACILITIES TO MEDICAL MEN

THE GRANVILLE HOTEL

On the East Cliff, Overlooking the Sea. **RAMSGATE.** Within Easy Access of all the Famous Golf Links.

Special terms and facilities for Golfers, including free conveyance to and from the North Foreland Golf Club.

Suite of Baths equipped with the most Modern Installation and Appliances for Scientific Medical Treatment—comprising Turkish Bath, Russian Vapour Bath, Radiant Light & Heat, High-Frequency & Sinusoidal Current, also Professor Bergonié's Apparatus for the Treatment of Rheumatoid Arthritis, Muscular Affections, Spinal Curvature, Colitis, Neurasthenia, &c.

Full Particulars of Treatment on application to the Manager.

Specially Reduced Terms for Winter Season.

GARAGE.

Telephone: Ramsgate 12. THE FINEST HOTEL ON THE COAST. Telegrams: "Granville Hotel."

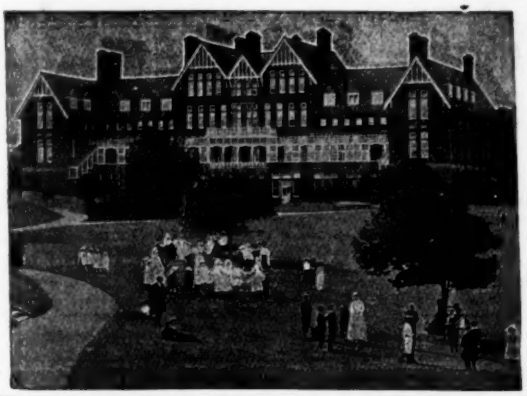
THE ACOMB NURSING HOME

Springfield Avenue, - HARROGATE -

The Home is devoted to MIDWIFERY conducted under SCOPOLAMINE-MORPHINE (TWILIGHT SLEEP). The Resident Physician was the first to introduce the Nursing Home treatment in Britain and has now had over 600 cases—the largest series outside Freiburg.

The Home is specially equipped for this work and has every luxury. No septic cases of any kind are admitted. Expert and Special Staff of Nurses.

Apply for particulars to THE MATRON or to W. OSBORNE GREENWOOD, M.D., B.S. (Resident Obstetrician).



YARROW CONVALESCENT HOME, Broadstairs.

FOR CHILDREN OF WELL-EDUCATED PEOPLE OF VERY LIMITED MEANS.

100 Beds. Boys, ages 4 to 12. Girls, ages 4 to 14. Charge, 21s. per week for each Child.

The usual stay is 4 weeks, but some wards are reserved for serious cases requiring special treatment, and for these a lengthened stay may, under some circumstances, be granted, and the age limit raised to 14 for Boys and 16 for Girls.

The Home faces the sea, and is open all the year, being as well adapted for winter as for summer residence.

Particulars can be obtained from the SECRETARY, 116, VICTORIA ST., WESTMINSTER, LONDON, S.W. 1 (formerly of 6, Holborn Viaduct).

INEBRIETY.

(Telephone: 16 Rickmansworth.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

BATH

7, LANSDOWN CRESCENT.

THE ST. CATHARINE NURSING HOME.

Beautiful position. Electric light and lift. Central heating. Dietetic and electrical treatment. Plombières douche. All chemical investigations. Telephone: 1119. Telegrams: "Nursing," Bath.

PINES SANATORIUM

Kelling Heath, HOLT, NORFOLK.

FOR THE TREATMENT OF PULMONARY AND OTHER FORMS OF TUBERCULOSIS.

Situate in the midst of Pine Woods and Heath. Near Coast. 20 acres grounds. High sunshine record.

For prospectus and full particulars apply the SECRETARY, Pines Sanatorium, Kelling Heath, Holt, Norfolk.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 83. Telegrams: "HYDRO, CATERHAM." Medical Superintendent: Dr. F. C. SHONE.

The Pines AROSA Switzerland

Small English Pension run on Sanatorium lines.

Apply Mrs. DONNER (late of Villa Gentiana).

Reference by permission to Dr. R. C. MORLAND.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Physicians: G. C. R. Harbinson, M.B., B.Ch. R. MacLelland, M.D., C.M. (Edin.)

Prospectus and full information on application to Managing Director.

INEBRIETY MELBOURNE HOUSE, LEICESTER

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Nat. Telephone: 768.

DUFF HOUSE, BANFF, SCOTLAND.

TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, INCLUDING TROPICAL DISEASES; DIABETES

and other complaints which need skilled chemical, bacteriological and protozoological investigation and dietetic treatment.

The House is fitted with Laboratories, X Ray Installation, Medical Baths, Central Heating, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply, THE SECRETARY, Duff House, Banff.

The Princess Christian College,

Fallowfield, Manchester.—There are a few VACANCIES in the Nurseries for Infants and little Children. Every care and attention. South aspect. Large garden. Terms on application to the Principal.

EPILEPSY.

Colthurst House School,

Warford, Alderley Edge.

(Under the Management of the Committee of the David Lewis Colony.)

Home Life, Medical Care, School Education, most suitable for boys subject to Epilepsy. Terms 42s. weekly.

Further particulars may be obtained from Dr. ALAN MCDOUGALL, The Colony, Warford, Alderley Edge.

EPILEPSY. THE DAVID LEWIS COLONY.

Stands in its own grounds of 180 acres and is situated in a beautiful part of Cheshire, 2½ miles from Alderley Edge Station, and 14 miles from Manchester. Electric light throughout. The Colony system ensures the social life and employment most suitable for those who suffer from Epilepsy. Patients certifiable under the Lunacy or Mental Defective Acts are NOT ELIGIBLE for admission. Two Resident Physicians. Terms for Middle- and Upper-class Patients, from 42s. a week upwards, according to accommodation and requirements. Private rooms can be provided.

For further information apply to the Director, Dr. ALAN MCDOUGALL, Warford, near Alderley Edge, Cheshire.

PRIVATE PATIENTS.

Three Counties Mental Hospital,
ARLESEY, BEDS.

Special accommodation for Paying Patients of both sexes is provided at "East View" and "West View."

Ample provision is made for treatment, occupation, and entertainment of the patients.

The situation is high, rural, and the air bracing.

Terms from 42s. per week, including all necessaries except clothing.

Further particulars and forms of admission may be obtained on application to the Medical Superintendent.

Grove House, All Stretton, Church
STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Telegraphic Address: "Relief, Old Catton." Telephone "290 Norwich."

NERVOUS & MENTAL AFFECTIONS.
Ladies only received.

The Grove, Old Catton, Norwich.—
A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates. Nurses supplied to take charge of patients under the care of their own medical attendants. For full particulars apply to the Misses McLINTOCK, or to CECIL A. P. OSBURNE, F.R.C.S.E., Medical Superintendent.

St. Michael's, Broadstairs, Kent.

The Misses G. FLETCHER, R.R.C., CORNELL, and O'REILLY receive INVALIDS for REST, CARE, or CONVALESCENCE.

Charming rooms, sheltered gardens, sea views, and excellent cooking.

Terms:—Five to fifteen guineas per week. 'Phone 195 Broadstairs.

Resident Patients.—Descriptive List
(Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C 2

A Resident Patient can be received
by Medical Man's widow in a charming country house, within fifteen miles of Town. Specially suited for nerve, drug, alcoholic, or other cases.—For further details and terms, apply E., care of Mr. Percival Turner, 4, Adam-street, Strand, W.C.2.

A small Farm and Garden School
has been opened at **THE GREY HOUSE, SEVENOAKS,** for GIRLS of the Backward, Borderline, or Nervous type.

A variety of indoor occupations taught.

The School is intended for girls of gentle birth, whose parents or guardians find themselves unable to pay the usual high fees. A few LADIES also received. For terms apply Mrs. PEARCE CLARK.

Bed-sitting Room in Doctor's house
close to Harley-street. Terms 2 guineas weekly, baths and service included; meals extra as desired. Use of consulting-room if required.—Address, No. 497, THE LANCET Office, 423, Strand, W.C.2.

University College Hospital, Gower-
street, W.C.1.—The appointment of RESIDENT MEDICAL OFFICER will become vacant on the 1st April, 1921. Salary £150 per annum, with board and residence. The appointment carries with it certain additional emoluments amounting to about £50 per annum in connection with the National Insurance Act.

Applications, accompanied by such evidence of fitness for the post as the candidate may desire to furnish, must reach the Secretary by noon on Saturday, February 26th, 1921.

The Belgrave Hospital for Children
(Incorporated), 1, Clapham-road, S.W.9.—The Committee of Management invite applications for the post of ASSISTANT PHYSICIAN. Candidates must be Graduates in Medicine of an English University, and Fellows or Members of the Royal College of Physicians of London. There is an honorarium of 50 guineas per annum attached to the post. Applications, with copies of testimonials, must be delivered to the undersigned by Tuesday, 1st March, from whom further information may be obtained. By order.

THOMAS CLAPHAM, Secretary.

Great Northern Central Hospital,
Holloway, London, N.7.—Applications are invited for the appointment of PHYSICIAN to the Hospital.

Candidates must possess the degree of M.D. or M.B. obtained by examination at a British University, and be Fellows or Members of the Royal College of Physicians of London, Edinburgh, or Ireland.

Applications, accompanied by 60 copies each of the letter of application and testimonials, should be sent by the 21st March to the undersigned, from whom particulars of the appointment may be obtained.

GILBERT G. PANTER, Secretary.

The Infants Hospital, Vincent-square,
Westminster.—The Committee of Management invite applications for the following posts, viz.:—

(a) PHYSICIAN. Candidates must be Graduates in Medicine of a recognised University and Fellows or Members of the Royal College of Physicians of London. (One of the Assistant Physicians is a candidate for this post.)

(b) ASSISTANT PHYSICIAN. Candidates must be Graduates in Medicine of a recognised University.

For each post, applications, with not more than three testimonials, must be sent to the undersigned not later than the 25th inst. The Committee of Management will meet for the purpose of electing on the 2nd March next.

4th, February, 1921. ALFRED J. SMALL, Secretary.

Queen Mary's Hospital for the East
END, Stratford, E.15.

Beds: 130. Out-patient attendances: 130,000.

Telephone: Stratford 714.

Patron: Her Majesty The Queen.

HONORARY OPHTHALMIC SURGEON.

Applications are invited for the post of Honorary Ophthalmic Surgeon. Candidates must be Fellows of a British College of Surgeons and engaged in consulting practice only.

Applications, accompanied by testimonials, should be sent to the undersigned at once. A. W. SCRIVENER, Secretary.

Queen Mary's Hospital for the East
END, E.15.

Beds: 130. Out-patient attendances: 145,000.

Telephone: Stratford, 714.

Patron: Her Majesty The Queen.

HOUSE SURGEON.

Applications are invited for the above post from fully qualified and registered Medical Men.

The Hospital contains 130 beds, including Maternity Wards, Ear, Throat and Nose, Ophthalmic and other Departments.

Applications, accompanied by copies of testimonials, to be addressed to the undersigned. A. W. SCRIVENER, Secretary.

Seamen's Hospital Society, Green-
wich, S.E.—The Committee invite candidates for the following appointments at the DREADNOUGHT HOSPITAL, Greenwich:—

ONE HOUSE PHYSICIAN.
ONE HOUSE SURGEON.

Candidates must be doubly qualified and registered.

Salary at the rate of £150 per annum, with board, residence, and washing.

The appointments will be for six months.

Applications, stating age, together with copies of not more than three recent testimonials (which must be printed or typewritten), to be sent in on or before Monday, the 14th February, to the undersigned, from whom further particulars can be obtained.

Candidates are invited to appear before the Medical Council at the Hospital for Tropical Diseases, Endsleigh-gardens, Euston-road, N.W., on Tuesday, the 15th February, 1921, at 5 o'clock.

By order.

Greenwich, 21st January, 1921. P. J. MICHELLI, Secretary.

All Saints' Hospital for Genito-
URINARY DISEASES.

Out-patient Department, 49/57, Vauxhall Bridge-road, S.W. 1.
In-patient Department, 91, Finchley-road, N.W. 8.

RESIDENT HOUSE SURGEON.

Applications are invited for the above post from fully qualified and registered Medical Men, to commence duty on March 1st.

Special opportunities exist for gaining experience in Cystoscopic, Urethroscopic, and all branches of Genito-urinary work.

The appointment is for six months, but the holder of the office is eligible for re-election.

Salary at the rate of £200 per annum, with board, lodging, and washing.

Apply at once to the Secretary, stating age, experience, qualifications, and enclosing copies of recent testimonials.

London (Royal Free Hospital) School
of MEDICINE for WOMEN and ROYAL FREE HOSPITAL.

CLINICAL UNIT IN GYNÆCOLOGY AND OBSTETRICS.

Applications are invited from registered Medical Practitioners for the following posts:—

1. FIRST ASSISTANT in the Unit. Salary £700 per annum. The appointment will be a whole-time appointment, and will be made for three years.

2. SECOND ASSISTANT in the Unit. Salary £500 per annum. The appointment will be a whole-time appointment, and will be made for two years.

Full particulars can be obtained from either of the undersigned, to one of whom twenty copies of application must be sent by February 25th, 1921.

LOUIE M. BROOKS, Warden and Secretary,
London (R.F.H.) School of Medicine for Women,
Hunter-street, W.C.

REGINALD R. GARRATT, Secretary,
Royal Free Hospital, Gray's Inn-road, W.C.

The Queen's Hospital for Children,

Hackney-road, Bethnal Green, E.2.—The Committee invite applications for Two posts of ASSISTANT PHYSICIAN.

Candidates must be Fellows or Members of the Royal College of Physicians of London.

Attendance required (a) Monday and Thursday afternoons, (b) Tuesday and Friday afternoons. Honoraria to cover travelling expenses.

Applications, with copies of not more than four testimonials, should be sent on or before 12 noon on Thursday, 3rd March.

Full particulars can be obtained from

T. GLENTON-KERR, Secretary.

7th February, 1921. Telephone: Dalston 305.

The London Lock Hospital, Harrow-

road, London, W.—The Board of Management invite applications for the appointment of HOUSE SURGEON (Male or Female) at the Female Hospital, Harrow-road. Duties to commence 25th March, 1921. Salary at the rate of £300 per annum, with furnished rooms, full board and washing. Candidates, who must be doubly qualified and duly registered, should send in their applications by 10 A.M., Feb. 22nd, 1921, accompanied by copies of three recent testimonials, to the undersigned, from whom further particulars can be obtained if desired. The appointment is for six months. By order of the Board,

HY. J. EASON, Secretary.

London Lock Hospital, Dean-street,

Soho W.1.—The Board of Management in its applications for the post of HOUSE SURGEON at the Male Lock Hospital. Candidates must be doubly qualified and duly registered. Salary at the rate of £200 per annum, with furnished flat, full board and washing. The appointment is for six months. Duties commence April 1st, 1921. Applications, enclosing copies of three recent testimonials, to be sent to the undersigned at the Chief Offices, 283, Harrow-road, W.9, on or before 10 A.M., February 22nd, 1921.

By order of the Board.

Chief Offices, 283, Harrow-road, W.9. HY. J. EASON, Secretary.

The London Lock Hospital, 91,

Dean-street, W.1. (Approved by the Ministry of Health under the Venereal Diseases Regulations, 1916).—The Board of Management invite applications for the appointment of REGISTRAR to the above Hospital. Candidates who must be doubly qualified, are invited to send in their applications, with three copies of testimonials only, to the Secretary at the above address not later than 10 A.M., February 22nd, 1921. Personal canvassing by candidates of the Board of Governors or Medical Staff is not permitted. Candidates must be Fellows (or Members) of the R.C.S. England, or a Surgical Graduate of a University of the United Kingdom. By order of the Board.

Chief Offices, 283, Harrow-road, W. HY. J. EASON, Secretary.

Evelina Hospital for Children, South-

wark, S.E.—The Committee of Management requires a HOUSE PHYSICIAN for six months, from 12th March (during the first two months duties will be mainly in Casualty Department). Salary at rate of £60 per annum, with board, residence, and washing.

Candidates should send applications, with copies of testimonials, to the Secretary, at the Hospital, before 24th inst.

Applicants (qualified and registered) must be interviewed by the Medical Committee. Selected candidates have to appear before the Committee of Management. Time and place of meeting will be notified by the undersigned, from whom rules and other particulars relating to the post must be obtained.

By order of the Committee of Management.

7th February, 1921. H. C. STANILAND SMITH, Secretary.

Evelina Hospital, Southwark, S.E.—

The Committee of Management invite applications for the post of SURGEON to Out-Patients (Honorary) (attendance Monday afternoons at 1.30). Candidates must be Graduates in Surgery in a recognised University or F.R.C.S. He must not be engaged in General Practice.

Applications, with copies of not more than four testimonials, to be addressed to the Secretary, at the Hospital, before the 24th inst.

Candidates must call on the members of the Honorary Medical Staff, whose names, also the Standing Orders relating to the post, will be furnished by the undersigned.

By order of the Committee of Management.

7th February, 1921. H. C. STANILAND SMITH, Secretary.

County Borough of East Ham Educa-

TION COMMITTEE.—SCHOOL DENTIST.—Applications are invited from qualified Registered Dentists for appointment as School Dentist and Dentist to the Maternity and Child-Welfare Centre.

The person appointed will be required to render full-time service to the Authority. The duties will include the examination of the teeth of children attending the Schools under the control of the Education Committee, the treatment of children suffering from dental defects, instruction in dental hygiene, and other similar duties in the School Medical Service and the Child-Welfare Centre.

The commencing inclusive salary will be £450 per annum, rising by annual increments of £25 to a maximum inclusive salary of £500 per annum.

Preference will be given to candidates who have had experience in similar work, or who have obtained Medical and Surgical as well as Dental qualifications.

Applications, in candidate's own handwriting, stating age, qualifications, and previous experience, accompanied by not more than three recent testimonials, must reach the undersigned not later than 12 noon on Wednesday, 16th February, 1921.

Canvassing the Committee, directly or indirectly, will disqualify for appointment. F. R. THOMPSON, Secretary.

Education Office, Town Hall, East Ham, E.6, Feb. 9th, 1921.

General Lying-in Hospital, York-

road, Lambeth, S.E.1.—The post of ASSISTANT PHYSICIAN is vacant. Candidates, who must be M.R.C.P., F.R.C.P., or F.R.C.S., are invited to send their applications, with copies of three testimonials, to the undersigned not later than Feb. 28th, 1921.

ROSE E. WHYTE, Secretary.

Middlesex Hospital, W. 1.—Applica-

tions are invited for the post of RESIDENT ASSISTANT ANÆSTHETIST, which will become vacant on March 1st; the appointment is an annual one, dating from January 1st. Salary £105 per annum, with board and residence. Applications, together with testimonials, to be sent to the Secretary-Superintendent not later than the 14th inst.

Westminster Hospital (opposite West-

minster Abbey).—There is a vacancy in the office of ASSISTANT HOUSE SURGEON. The appointment is until the 30th of April, 1921, non-resident, but board provided, to be followed by six months as House Surgeon, with board and lodging in the Hospital.

Candidates must be registered Medical Practitioners, and applications should be sent to the undersigned.

SIDNEY M. QUENNELL, Secretary.

Royal Waterloo Hospital for Children

and WOMEN, S.E.1.—Applications are invited from qualified Male Practitioners for the following post vacant immediately:—

NON-RESIDENT CASUALTY OFFICER, to work in the Out-patient Department on five days a week, at £150 per annum, lunch and tea provided. Application, with copies of testimonials, should be forwarded by February 21st to the Secretary, from whom further particulars can be obtained.

St. Peter's Hospital, Henrietta street,

Covent Garden, W.C.2.—The Committee of Management invite applications for the post of HONORARY MEDICAL OFFICER to the Venereal Disease Department.

The appointment is tenable for three years, and it is suggested that the attendance should be on Monday, Wednesday, and Saturday from 5 to 7 o'clock.

Applications should be sent to the Secretary at the Hospital by 24th instant IRWIN H. BEATTIE, Secretary.

National Hospital for the Paralysed

AND EPILEPTIC, Queen-square, W.C.1.—RESIDENT MEDICAL OFFICER. This appointment will shortly become vacant, and the Board of Management invite applications from duly qualified candidates. The conditions of the appointment will be supplied by the undersigned. The salary is £200 a year, with board and lodging. Applications, accompanied by copies of three recent testimonials, should be sent in by Feb. 28th. GODFREY H. HAMILTON, Secretary

Metropolitan Hospital, Kingsland-

road, E.8.—The Committee of Management are prepared to receive applications for the appointment of an ASSISTANT PHYSICIAN. Candidates must be Fellows or Members of the Royal College of Physicians of London, and Graduates in Medicine of a University recognised by the Medical Council, and not engaged in general practice. Applications, with copies of three testimonials, to be sent on or before 28th February, 1921, to

A. LISTER HARRISON, Chairman of Committee.

Hospital for Epilepsy and Paralysis

and OTHER DISEASES of the NERVOUS SYSTEM, Maida Vale, W.—RESIDENT MEDICAL OFFICER wanted. Applications are invited for the post of Resident Medical Officer. They should be accompanied by copies of not more than three recent testimonials, and should be sent to the undersigned by 25th February.

The appointed candidate will be required to take up his duties on 1st March. The appointment is for six months, and the salary is at the rate of £150 per annum, with board, lodging, and washing.

H. W. BURLEIGH, Secretary.

The Hospital for Women, Soho-

square, W.1.—A vacancy having occurred in the office of HONORARY MEDICAL OFFICER in charge of Out-patients, applications are hereby invited for the post. Candidates must be Graduates in Medicine of a recognised University, and Fellows of one of the Royal Colleges of Surgeons of the United Kingdom. Applications and testimonials must be forwarded to the undersigned (from whom further information may be obtained) on or before Wednesday, 23rd February, 1921.

Candidates are invited to call upon the Members of the Honorary Medical Staff. ALFRED HAYWARD, Secretary.

London County Council.—Applica-

tions are invited from qualified and registered Medical Men desirous of obtaining experience in the Treatment of Mental Diseases to act as CLINICAL ASSISTANTS at the London County Mental Hospitals. The appointment will be for a term not exceeding six months. Remuneration £200 a year; no emoluments. Charge will be made for board, lodging, and laundry (at present two and a half guineas a week). Preference will be given to candidates who have served or attempted to serve with H.M. Forces. Full particulars and conditions of appointment on form of application (on which alone application must be made), obtainable from the Asylums Officer, London County Council, 15, Arundel-street, Strand, W.C.2. Canvassing disqualifies. JAMES BIRD, Clerk of the London County Council.

Bolingbroke Hospital, Wandsworth Common, S.W. 11.—RESIDENT MEDICAL OFFICER required on March 1st. Appointment for twelve months. Salary £200 per annum, with board, residence, and laundry. Applications, accompanied by three copies of testimonials, to be sent to ARTHUR J. OAKLEY, Secretary Superintendent.

Cossham Memorial Hospital, Kingswood, Bristol.—Wanted, VISITING SURGEON beginning of April. Honorarium to cover expenses. Apply, Secretary.

Manchester Royal Eye Hospital.—HOUSE SURGEON. Salary £120, with residence, board, &c. Applications, endorsed "House Surgeon," with copies of testimonials, to be addressed to the Chairman of the Board of Management.
W. S. PROPHET, Secretary.

Croydon General Hospital.—Second HOUSE SURGEON required. Applicants must be duly qualified and registered. Salary £150 per annum, plus board, residence, and laundry. Applications, stating age, when able to commence duty, &c., accompanied by copies of recent testimonials, to be sent to
Croydon, Surrey. GEORGE H. DAMS, Secretary.

Bristol Royal Infirmary.—Applications are invited for the post of HON. MEDICAL REGISTRAR. Candidates, who must be fully qualified and registered, to send in their applications, together with copies of testimonials, to the undersigned, on or before Monday, Feb. 21st, 1921.
ELLIS C. SMITH, F.C.I.S., Secretary & House Governor.

Bristol Royal Infirmary.—Applications are invited for the post of HOUSE SURGEON to the Ear, Nose, and Throat Department. Salary at the rate of £120 per annum, with board, apartments, and laundry. Candidates, who must be qualified, to send in their applications, together with copies of testimonials, to the undersigned, on or before Feb. 22nd, 1921.
ELLIS C. SMITH, F.C.I.S., Secretary & House Governor.

Newark Hospital and Dispensary.—Wanted, a Male RESIDENT HOUSE SURGEON, fully qualified, to commence duties at once. Ample time for reading. Salary £200 per annum, with board, lodging, and laundry in the Hospital. Applications, stating age, with copies of three recent testimonials, to be sent to the Secretary, HENRY CRAMPTON, 27, Kirk Gate, Newark-on-Trent.

Leicester Royal Infirmary.—There is a vacancy for a HOUSE SURGEON. Appointment for six months.
Salary at the rate of £200 per annum, with board, apartments, and washing.
Applications, with copies of recent testimonials, to be made forthwith to the House Governor and Secretary at the Infirmary.
8th February, 1921.

Royal Gwent Hospital, Newport, Mon. HOUSE SURGEON required. Salary at the rate of £200 per annum, with board, residence, and laundry.
There are four other Resident Officers.
Applications, stating age and qualifications, with copies of testimonials, to be sent to the undersigned.
Applications from Ladies not entertained as there is no accommodation (Signed)
Feb. 8th, 1921. J. K. MILLWARD, Secretary-Superintendent.

The Sheffield Royal Hospital.—Applications are invited for the post of RESIDENT SURGICAL OFFICER. Salary £250 per annum, with board, residence, and laundry. Applicants must be registered Medical Practitioners and unmarried. The appointment is tenable for one year. The successful candidate will commence duty on the 15th of March. Applications, with qualifications, experience, and copies of testimonials, to be sent in to me not later than the 1st of March.
The Board Room, 5th February, 1921. JOE W. ROBINSON, Secretary.

Northumberland County Asylum, Morpeth.—ASSISTANT MEDICAL OFFICER (Male, single) wanted for the above Asylum.
Salary £400, with board, apartments, laundry, and attendance. Applicants must be duly registered. Applications, stating age, qualifications, &c., with copies of three testimonials, to be addressed to the Medical Superintendent not later than 19th February, 1921.
The appointment will commence on the 21st March, 1921, and will be subject to the provisions of the Asylums Officers' Superannuation Act.

County Hospital, Lincoln.—Wanted, a JUNIOR HOUSE SURGEON. Salary at the rate of £150 per annum, rising to £200 per annum at the completion of six months' approved service. Board, residence, and washing will be provided.
Candidates for the appointment must be duly registered under the Medical Acts.
Applications, stating age and other particulars, with copies of not more than three recent testimonials, should be addressed to the undersigned, from whom any further particulars may be obtained.
ARTHUR MOORE, Secretary-Superintendent.
Lincoln, 7th Feb., 1921.

Eccles and Patricroft Hospital.—Wanted, RESIDENT HOUSE SURGEON. Thirty beds. Ample time for reading. Salary £200, with board, &c. Applications, giving age, qualifications, and testimonials, to GEO. H. ANDERSON, St. Moritz, Eccles, Manchester.

Hull Royal Infirmary, Hull.—Wanted at once, ASSISTANT HOUSE SURGEON. Salary £150 per annum, with board and residence.
Applications, together with copies of recent testimonials, should be addressed to B. BROOKS, Secretary.

The Royal Infirmary, Sunderland.—Wanted, Two JUNIOR HOUSE SURGEONS (Male), to commence duties about April 1st. Salary £200 per annum, with board, residence, and laundry. State age and qualifications, and submit copies of three testimonials to S. C. FRYERS, Secretary.

Peterborough General Infirmary.—Wanted, HOUSE SURGEON (Male, unmarried). Salary £200 per annum, with residence, board, and laundry. Number of beds 65.
Apply, with age, qualifications, and copies of recent testimonials, to the Hon. Sec., Medical Board.

County Council of East Sussex.

DARVELL BANK SANATORIUM FOR TUBERCULOSIS, Robertsbridge.

The Public Health and Housing Committee invite applications from Medical Men with special experience in the treatment of Pulmonary Tuberculosis for the appointment of MEDICAL SUPERINTENDENT of the Darvell Bank Sanatorium for Tuberculosis. The salary is at the rate of £750 a year, with lodging, board, and washing. Applications, stating age of applicant and previous experience, accompanied by three recent testimonials, should be forwarded on or before Thursday, the 24th February, 1921, to HUGH J. T. MCILVEEN,
Clerk of the County Council of East Sussex.
County Hall, Lewes, Feb. 8th, 1921.

Vacancies exist for Two Junior MEDICAL OFFICERS (single), one at each of the undermentioned Hospitals:—
MINISTRY OF PENSIONS HOSPITAL, Frognal, Sidcup.
Salary £400 per annum (Resident).
MINISTRY OF PENSIONS HOSPITAL, Sunderland.
Salary £350 per annum, inclusive, and lodging, fuel, and light, or an allowance of £100 per annum if quarters are not available.
Applicants for the former post must have had experience of Ear, Nose, and Throat Surgery.
Applications should be accompanied by recent testimonials or references.
Preference given to applicants with war service. Address to Secretary, M.S.I.B., Ministry of Pensions, 5, Millbank, S.W.1.

County Borough of Wigan.—Appointment of MEDICAL OFFICER OF HEALTH.—Applications are invited for the position of Medical Officer of Health.
Candidates must have had previous experience in the various duties attaching to the position of Medical Officer of Health, and must possess the Diploma of Public Health.
Salary (which will be inclusive) £450 per annum, rising by annual increments of £50 to a maximum of £1000.
The appointment will be subject to the approval of the Ministry of Health.
A copy of the conditions of appointment (setting out the various duties attaching to the position) may be obtained on application to the undersigned.
Sealed applications, endorsed "Medical Officer of Health," stating age, qualifications, and experience, and accompanied by copies of not more than three recent testimonials, to be in my hands not later than Saturday, the 5th of March next.
WILLIAM HENRY TYRER, Town Clerk.
Town Clerk's Office, Wigan, 3rd February, 1921.

Cheshire County Council.

TUBERCULOSIS SCHEME.

WRENBURY HALL TRAINING AND EMPLOYMENT COLONY.

APPOINTMENT OF RESIDENT MEDICAL SUPERINTENDENT.

The Cheshire County Council invite applications for the post of Resident Medical Superintendent (Male) for the above-named Institution at a salary of £600 per annum, rising by annual increments of £50 to £700 per annum, together with furnished apartments, attendance, board, and laundry.
Applicants must be registered Medical Practitioners between thirty and forty-five years of age, who have held appointments in a General Hospital for at least six months, and had special experience in the diagnosis and treatment of Tuberculosis.
Experience in Industrial Medicine or in the training and employment of Tuberculous men in suitable occupations will be deemed additional qualifications.
Forms of application and terms of appointment may be obtained from the undersigned.
Applications accompanied by copies of three recent testimonials to be delivered not later than 23rd February, 1921.
DR. T. H. PEYTON, County Tuberculosis Officer.
Public Health Department, 43, Foregate-street, Chester.

Great Yarmouth Hospital (72 beds).

HOUSE SURGEON required to undertake duties early in March.

Candidates (Male), who should be duly qualified and registered, should send applications, with recent testimonials, to the Hon. Sec., General Hospital, Great Yarmouth.

Salary £250, with board, lodging, and laundry.

Wolverhampton and Staffordshire

GENERAL HOSPITAL.—HONORARY SPECIALIST wanted to take charge of Ear, Nose and Throat Department. Must not be engaged in General Practice.

Applications, stating qualifications and experience, to be forwarded to the undersigned. W. H. HARPER,
House Governor and Secretary.

Wolverhampton, February 7th, 1921.

County Mental Hospital, Berry Wood,

Northampton.—SENIOR ASSISTANT MEDICAL OFFICER required. Salary £300, rising £25 annually to £450, and emoluments valued at £100 to which the Civil Service Bonus is added, making the present value of the figures £643, increasing to £773 with emoluments valued at £183 10s. Deductions under the Asylum Officers' Superannuation Act. Applications, with copies of recent testimonials, to be sent to the Medical Superintendent.

County Mental Hospital, Berry Wood,

Northampton.—JUNIOR ASSISTANT MEDICAL OFFICER required. Salary £210, rising £25 annually to £285, and emoluments valued at £100, to which the Civil Service Bonus is added, making the present value of the figures £404, increasing to £520, with emoluments valued at £183 10s. Deductions under the Asylum Officers' Superannuation Act. Applications, with copies of recent testimonials, to be sent to the Medical Superintendent.

Kent Education Committee.—The

Committee invite applications for the appointment of a permanent SCHOOL MEDICAL INSPECTOR, to act under the supervision of the School Medical Officer. The appointment is open to Lady Doctors only.

The selected candidate will be required to devote the whole of her time to the duties of the office.

The salary is at the rate of £500, inclusive of present war bonus, to be increased by two annual increments of £25, with full travelling and subsistence allowances.

Applications, stating age and full qualifications and accompanied by copies of three recent testimonials, must be forwarded to the undersigned to arrive not later than 17th February, 1921.

No official form of application will be issued, and canvassing will be considered a disqualification.

ALFRED GREENWOOD, M.D., School Medical Officer.

Sessions House, Maidstone, 1st February, 1921.

Newport (Mon.) Education Com-

MITTEE.—ASSISTANT SCHOOL MEDICAL OFFICER and MEDICAL INSPECTOR OF SCHOOLS.—The Committee invite applications for the post of Assistant School Medical Officer and Inspector of Schools. The post is open to men only. The person appointed shall devote his whole time to the duties connected with the appointment, and carry out such duties under the direction of the School Medical Officer. Salary £600 per annum, rising to £650 at the end of twelve months' service.

The appointment will be terminable by three months' notice from either side.

Special consideration will be given to those applicants who have had opportunities of studying Children's Diseases and Anæsthetics.

Applications, accompanied by copies only of three recent testimonials, stating age, qualifications, experience, and essential particulars, should be sent in to me at once.

Canvassing will be considered a disqualification.

T. ARTHUR HAVES, Secretary and Executive Officer.

Education Offices, Charles-street, Newport (Mon.),
1st February, 1921.

ORTHOPÆDIC CENTRE.
BIRMINGHAM.

Highbury, Uffculme, Sorrento

HOSPITALS.

MEDICAL SUPERINTENDENT.

The Committee of Management invite applications for the above Whole-time post, which becomes vacant on March 1st next.

The Hospitals concerned represent a total of 310 beds, with a large out-patient department and curative workshops. Orthopædic cases constitute the majority, together with limb-fitting and paraplegia cases.

Two Resident Medical Officers and three Visiting Surgeons and Physicians are on the Staffs of the Hospitals.

Salary £500, with quarters, less a deduction of approximately £35 per annum for board and laundry, and subject to approval of the Ministry of Pensions. No married quarters are available. Preference will be given to candidates with War Service overseas and Fellows of the Royal College of Surgeons.

The appointment, which will be made subject to the approval of the Ministry of Pensions, will be terminable by one month's notice on either side. Applications, accompanied by three recent testimonials and statement of service and experience in Orthopædic Surgery, should be sent to the Chairman, Hospitals Committee, Uffculme Hospital, Moseley, Birmingham, on or before Thursday, 17th February.

Feb. 8th, 1921.

Cheshire County Asylum, Parkside,

Macclesfield.—Wanted, Male ASSISTANT MEDICAL OFFICER. Previous Asylum experience not essential. Salary £350, with board, lodging, and washing, valued at £100.

Subject to deductions under the Asylums Officers' Superannuation Act, 1909.

Apply, stating qualifications, with copies of three recent testimonials, to the Medical Superintendent, County Asylum, Macclesfield.

Winsley Sanatorium.—The Governors

invite applications for the appointment of ASSISTANT RESIDENT MEDICAL OFFICER.

Salary £250 per annum, rising to £300, with apartments, board, and laundry.

Applications, stating age experience, together with copies of not more than three recent testimonials, should be sent to the undersigned not later than February 19th. FREDERIC JONES, Secretary.

Winsley Sanatorium, near Bath, 7th February, 1921.

Borough of Brighouse.—Applications

are invited for the position of Whole time MEDICAL OFFICER OF HEALTH and SCHOOL MEDICAL OFFICER.

Salary £650 per annum. No war bonus payable.

Applications, stating age, previous experience and qualifications, together with copies of not more than three testimonials, to be forwarded to me on or before Wednesday, the 23rd February, in envelope endorsed "Medical Officer." P. T. GROVE, Town Clerk.

Municipal Offices, Brighouse, 29th January, 1921.

Kent County Mental Hospital,

Chartham, near Canterbury.—JUNIOR ASSISTANT (THIRD) MEDICAL OFFICER (Male) required, single.

Salary £350, rising by £25 to £400 per annum, with board, furnished quarters, attendance, and laundry, valued at £209 per annum.

The appointment will be made subject to the Asylums Officers Superannuation Act, 1909.

Application, stating qualifications, &c., with copies of three recent testimonials, to be sent to the Medical Superintendent on or before Friday, March 4th.

Manchester Royal Infirmary.—

PATHOLOGICAL REGISTRAR.—The Board of Management invite applications for the above office. Candidates must be fully qualified and registered. The appointment is for twelve months, but the holder of the office is eligible for re-election for a further period of one year. Salary £350 per annum. Candidates are required to send their applications and copies of testimonials to the Chairman of the Medical Board on or before Monday, 21st February, 1921.

By order.

3rd February, 1921. FRANK G. HAZELL, Gen. Supt. and Secretary.

The Royal Infirmary, Sheffield

(363 beds).—Wanted, an ASSISTANT CASUALTY OFFICER. Salary £150 per annum, with board and residence. The duties of the officer will include work in the In- and Out-patient Departments under the supervision of the Honorary Medical Staff.

There are ten resident appointments.

Applications, which are invited from persons who must be fully qualified, should be sent to the Secretary immediately, stating age, qualifications, and any previous experience.

Board Room, 28th January, 1921. JNO. W. BARNES, Secretary.

South Devon and East Cornwall

HOSPITAL, Plymouth (176 beds).—The Committee invite applications for the appointment of a qualified HOUSE PHYSICIAN, to commence duties at once. The duties comprise Medical, Surgical, and Anæsthetic work. Salary £175, with board, residence, and washing. Candidates should send copies of not more than three testimonials to

Plymouth, 4th February, 1921. P. J. LANGDON, Secretary.

South Devon and East Cornwall

HOSPITAL, Plymouth.—There is a vacancy in the position of ASSISTANT SURGEON to the Hospital. Candidates must hold a legal Medical and Surgical qualification. The elected candidate shall not, without the sanction of the Committee, hold any active professional appointment to any other Medical Charity in the Three Towns, and with regard to the Quinquennial Election, shall reckon his appointment from the date of the appointment of his predecessor.

Applications and testimonials, if any, must be delivered at the Secretary's Office not later than Thursday, 17th February, 1921.

Canvassing for votes is prohibited.

Particulars of the duties may be had on application to the undersigned. By order of the Committee.

January 31st, 1921. P. J. LANGDON, Secretary.

County Borough of Burnley.—

ASSISTANT MEDICAL OFFICER OF HEALTH.—Applications are invited for the post of Assistant Medical Officer of Health (Female), who will be chiefly employed as Assistant School Medical Officer.

The possession of the D.P.H. is desirable.

Commencing salary £500 per annum, rising by annual increments of £25 to £600 per annum, plus an economic bonus of at present £30 per annum. This bonus will increase or decrease according to the cost of living.

The appointment is subject to three months' notice by one party to the other.

Forms of application, obtainable from the Medical Officer of Health, St. James-street, Burnley, together with copies of three recent testimonials, should be forwarded to him on or before Feb. 21st, 1921.

Town Hall, Burnley, Feb. 5th, 1921. J. D. RITCHIE, Town Clerk.

Beckett Hospital, Barnsley (120 beds).—JUNIOR HOUSE SURGEON (Male) required. Duties to commence 12th March, 1921.

Salary £200 per annum, with board, residence, and laundry. Candidates must be unmarried, fully qualified and registered. Applications, stating age, qualifications, experience, and nationality, with copies of three recent testimonials, should be addressed to The Secretary, Beckett Hospital, Barnsley.

Dundee Royal Infirmary.

The Directors invite applications for the office of

HONORARY VISITING SURGEON,

vacant through the death of Mr. W. L. Robertson.

Applications, with testimonials, to be lodged with the Secretary on or before Wednesday, 23rd February.

Required for South Africa, fully qualified RESIDENT HOUSE SURGEON, with thorough knowledge of X ray work, single, not over thirty. Salary first year, £300, second year £350, third year £400, all found. Apply H. CHAPLIN & Co., 101, Leadenhall street, E.C., with full testimonials, qualifications, and references.

Medical Officer.—Wanted immediately for a Group of Estates in North-East India. Must be fully qualified and experienced in General Practice. Married man preferred. Salary Rs.1200 per month, with allowances and unfurnished bungalow. Passage out paid.—Apply, with full particulars and copies of testimonials, address "Cha." Wm. Porteous & Co., Advertising Agents, Glasgow.

Straits Settlements.—There is a vacancy in the appointment of ASSISTANT PRINCIPAL of the MEDICAL SCHOOL, Singapore. The salary of the post is $600 per month, rising by $25 per month annually to $800 per month, plus a strictly temporary allowance of 20 per cent. for unmarried and 40 per cent. for married men. The sterling value of the Straits dollar is at present fixed at 2s. 4d. for purposes of payment of salary, &c., in this country. Candidates should possess special qualifications in Physiology and Zoology. Forms of application may be obtained from the Assistant Private Secretary (Appointments), Colonial Office, Downing-street, S.W.1.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £20 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks, according to particular route.—Apply, Medical Superintendent, Messrs Elder Dempster and Co., Limited, Colonial House, Liverpool.

Assistant wanted with view to early Partnership.—Mr. Turner has several openings for well-qualified men in good Practices in Town and Country. Full particulars on application, with details of requirements, &c.—Apply, Mr. Percival Turner, 4, Adam-street, London, W.C.2.

Locum Tenens Provided.

APPLY TO

ARNOLD & SONS,

6, GILTSPUR STREET, LONDON, E.C.1.

Telegrams: "Instruments, London." Telephone: 5240 City (3 lines).

Young Doctor, thoroughly experienced, desires WHOLE- or PART-TIME WORK in London Surgery. Tel.: 235 Museum.

F.R.C.S. Ed., ex-I.M.S., H.S., and Oph. H.S. several years, would like PART-TIME WORK in London.—Address, No. 600, THE LANCET Office, 423, Strand, W.C.2.

Wanted, Assistantship (or 3-4 months' LOCUM WORK in London) by a Parsi Doctor. Single, temperate, cyclist, young, experienced in panel and private practice. Recent testimonials.—Address, No. 602, THE LANCET Office, 423, Strand, W.C.2.

Assistantship, with view to Partnership, wanted in London by qualified Medical Man (married). Ex-H.S., ex-Capt. R.A.M.C. Good testimonials.—Address, No. 607, THE LANCET Office, 423, Strand, W.C.2.

Medical Man, foreign degree, engaged on own research work, would like paid PART-TIME LABORATORY WORK or Assist in other Research Work.—Address, No. 608, THE LANCET Office, 423, Strand, W.C.2.

University Graduate wishes to hear of Surgical Opening abroad—China, New Zealand, &c. Highest social and professional references.—Address, No. 609, THE LANCET Office, 423, Strand, W.C.2.

Locum Tenens Provided

at short notice.

Apply to Mr. PERCIVAL TURNER,

the oldest and only Agent who for forty years, *without agency fee to Principals*, has supplied Practitioners with reliable substitutes,

4 & 5, ADAM STREET, ADELPHI, STRAND, W.C.2.

Telegrams: Epsomian, London. Telephone: Gerrard 399.

After 5 P.M.—Tel. Epsom 695.

Lady Dispenser (Hall), Technical College and Hospital trained, seeks post.—Roberts, 30, Montpellier-crescent, Brighton.

Lady Dispenser and Bookkeeper (qualified) requires post with Doctor. Previous experience two years, in private and panel practice. Good references.—M. D. W., "Tresco," Loughton, Essex.

Lady (24) experienced in Shorthand, Typing, and Accounts, desires SECRETARIAL post. Good knowledge of medical terms.—Address, No. 599, THE LANCET Office, 423, Strand, W.C.2.

Lady with Medical Secretarial experience desires post as Factotum with West-End Doctor or Dentist. Capable and tactful.—Address, No. 601, THE LANCET Office, 423, Strand, W.C.2.

Lady, young, well educated, domesticated, and fond of country life, desires post in Doctor's house as SECRETARY or COMPANION-HELP. Good needlewoman. Shorthand and typing. Pref. Kent or Surrey.—Address, No. 603, THE LANCET Office, 423, Strand, W.C.2.

Medical Men's Accounts and Books. Assistance given in keeping these on days when not employed by the Civil Service Commissioners or any evening.—Address, A. H. Oldham, 3a, Grove End House, St. John's Wood, N.W.8.

Electro-Cardiography.

ELECTRO-CARDIOGRAMS TAKEN FOR PHYSICIANS.

Mr. B. WHISH, 11a, Welbeck-street, W.1.

Tel.: Mayfair 2534.

Wanted in West End by an Oxford Graduate, PARTNERSHIP in good Mixed Practice. S.W. or N.W. preferred. Share worth about £1000 a year. Ample capital.—Details to 2271, Mr. Percival Turner, 4, Adam-street, London, W.C.2.

Wanted by M.B., B.S. (Honours), aged thirty, married, no children, PARTNERSHIP in good-class Practice, with scope for Eye work. Short preliminary Partnership desirable.—Address, No. 598, THE LANCET Office, 423, Strand, W.C.2.

Required, a Country Practice within sixty miles of London. Receipts not less than £1000 per annum. Good house essential.—Send full details in confidence to Dr. K., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

Wanted, small unopposed Country PRACTICE £400 to £700 per annum. West, South Midlands, or East Herefordshire preferred.—Address, No. 605, THE LANCET Office, 423, Strand, W.C.2.

Wanted by M.B., a Middle- and Working-class PRACTICE with about 1500 panel, in London or Suburb. Now free.—Apply, Blundell & Co., Walter House, 418-422, Strand, W.C.2.

Wanted in London, a General Practice with good Panel. Receipts not less than £1000 per annum. Can settle at once.—Send full details in confidence to Dr. H., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1. (opposite St. Bartholomew's Hospital).

Wanted by F.R.C.S., aged 30, a good-class PRACTICE or PARTNERSHIP in residential Town—e.g., Oxford or Bournemouth.—Apply, Blundell & Co., Walter House, 418-422, Strand, W.C.2.

Wanted in London, a Cash and Panel PRACTICE producing not less than £1000 per annum. Free to negotiate at once.—Send full details in confidence to Dr. C., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

Wanted, Private and Panel Practice in pleasant residential locality. Receipts over £1000 a year. Nice house with garden preferred. Partnership entertained. Capital at command.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2. (No charge unless sale effected.)

Wanted, Practices and Partnerships. Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers (Estbd. 100 years), are in urgent need of Practices or Partnerships for several of their Clients who are anxious to settle down at once.—Send full particulars, in confidence, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Partnership with Succession in two years to Country Practice in charming locality within fifty miles. Income £1600. Three-eighths Share for Sale. Incomer must reside with vendor pro tem.—Apply, Herbert Needes, 31, Bedford-street, Strand, W.C. 2.

South Coast.—Partnership.—£2800 a year. Old-established, in thriving Coast Town, with good Hospital. Ample scope. One-third Share for Sale at first. Single man with University degree preferred. Personally known and recommended.—Apply, 6925, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

For Disposal, Practices or Partnerships.—Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers (Estbd. 100 years), have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

For Disposal.—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with forty years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

Lancs.—A Cash and Panel Practice situated in a thickly populated centre producing over £2000 per annum. Panel list 1300. Fees 3s. 6d. to 21s. Excellent house in central position; rent £75 per annum. Premium for quick sale £1500. —Quote Folio 1248, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

London Suburb, S.W. — £2400 a year. — Old-established General PRACTICE in middle class suburb. Panel over 1300. Midwifery 2 to 4 guineas. Visits 3s. to 7s. 6d. Corner house on lease. Efficient introduction. Premium £3500.—Apply, No. 6918, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Norfolk.—Unopposed Country Practice. First-class agricultural, residential and sporting district. Receipts £1600 per annum. Good house (twelve or thirteen rooms), large garden, orchard, &c.; rent £35. Lease. Vendor going abroad.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2.

For Disposal.—S.W. County.—£2500 a year, increasing. Panel 1000. Detached house, small garden. Easily worked. Small Town. Colliery district. Safe income. Vendor retiring. Premium £1500 down, balance by instalments.—Apply, 6924, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Essex.—A General Practice situated in a Pretty Coast District. Receipts over £1500. Panel 1150. Fees 2s. 6d. upwards; medicine extra. House in central position; rent £52 per annum. Premium £2000.—Quote Folio 1354, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

£4000 a year for £1000 down and balance by yearly payments.—Old-established PRACTICE in small Town in North. Panel over 2000. Good family house, large garden to be rented. Cottage Hospital. Total premium £4000 including book debt. Would suit two friends.—Apply, 6915, Mr. Percival Turner, 4, Adam-street, London, W.C. 2.

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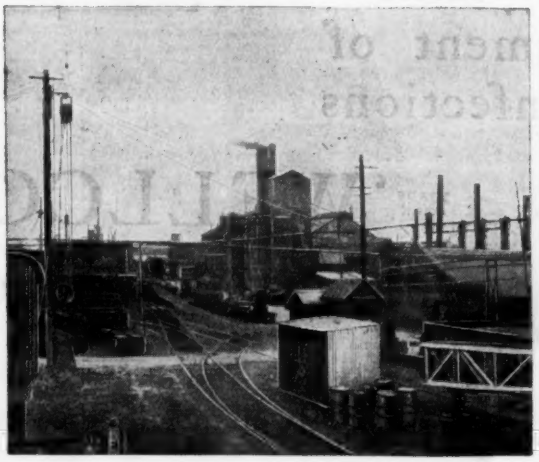

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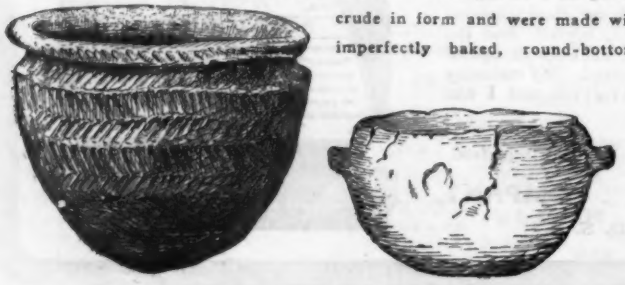
EXAMPLES OF THE EARLIEST FORMS OF POTTERY.—The Neolithic people are generally considered to have been the pioneers of the potter's art, although it is claimed by some, and may yet be proved to have been the case that this development took place in Palaeolithic times. The earliest vessels are crude in form and were made without the aid of the potter's wheel. They were imperfectly baked, round-bottomed and made of coarse material containing impurities such as sand, stone and shells. The vessels were often provided with projections which are perforated knobs rather than handles. In later Neolithic times the manufacture of pottery would appear to have become an important and widespread industry.



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